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Operational Manual
Volume I

Technical Report Number 12

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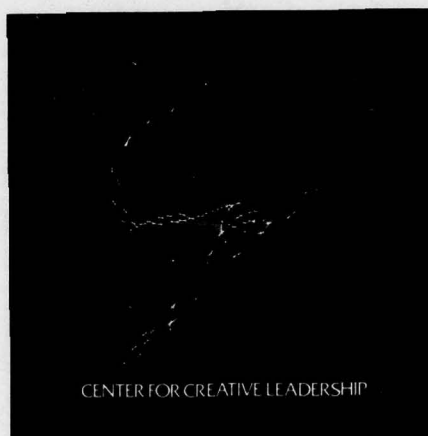
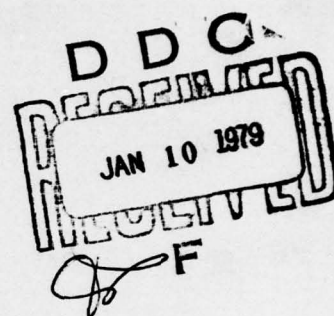
Morgan W. McCall, Jr.
Michael M. Lombardo

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An Organizational Simulation

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20. This report is divided into four sections. Section I describes the development of Looking Glass. Included are the chronology of what occurred from original idea to final pretest runs and a summary of assumptions and biases related to constructing a realistic management simulation.

The next section discusses research issues, such as the experimental modes built into the design, possible manipulations, measurement strategies, and preliminary hypotheses. The third section outlines training uses of Looking Glass. The final section explains the nuts and bolts of running the simulation.

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LOOKING GLASS, INC.
AN ORGANIZATIONAL SIMULATION

Morgan W. McCall, Jr.

Michael M. Lombardo

Operational Manual Volume I

Technical Report Number 12
October 1978

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Notice

The material contained herein relates to a simulation of managerial performance developed by the Center for Creative Leadership pursuant to a contract with the Office of Naval Research. The context of the simulation is a fictitious corporation in the American glass industry. Any points of similarity between the simulation and an existing glass company are purely coincidental.

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The mission of the Center for Creative Leadership is to improve the practice of management by encouraging the identification and development of creative leadership in contemporary organizations.

The Center for Creative Leadership is a nonprofit educational institute using knowledge from the social and behavioral sciences to understand and teach creative leadership. To this end, the Center has focused on three areas:

--Management - Planning, implementing, producing and controlling information, and evaluation of impact.

--Career Development - Leadership development is essentially career development based on personal effectiveness, proceeding through a series of challenging assignments.

--Group Dynamics - Leadership is always done through others, being responsible to or for others.

The Center is working to accomplish this mission through programs of research, training, and communication.

Description of Volumes

Looking Glass is a simulation of a glass manufacturing corporation. There are twenty positions, ranging across three divisions and four levels (Plant Manager, Director, Vice-President, and President). The divisions face different environments, ranging from volatile to stable. Looking Glass is, in a word, typical--the organizational type, structure and environments are common. All problems contained in the simulation are based on actual events.

Volume I of the simulation materials is divided into four sections. Section I describes the development of Looking Glass. Included are the chronology of what occurred from original idea to final pretest run and a summary of assumptions and biases related to constructing a realistic management simulation. The next section discusses research issues such as the experimental modes built into the design, possible manipulations, limitations of the simulation, measurement strategies, and preliminary hypotheses. The third section outlines training uses of the simulation, including one detailed example of a training program. The final section explains the nuts and bolts of running the simulation. This section and the appendices that follow enable users to refer to staffing and administrative necessities.

Volumes II through IV contain the simulation materials. Volume II contains all memos relating to the Advanced Products Division, and also includes organization-wide corporate memos, and all memos to the President. Volume III contains all memos relating to the Commercial Glass Division, and Volume IV, all memos concerning the Industrial Glass Division.

Subsequent volumes will contain standardized responses to information requested by participants (Volume V) and a complete listing and analysis of all problems participants face (Volume VI).

Acknowledgments

Although only two names appear on this manual, the Looking Glass project has been a four-person effort from the beginning. David DeVries was a co-investigator involved in all aspects of simulation design and development. He authored the entire Industrial Glass Division. Susan Rice, project coordinator, oversaw the set up of the runs and materials, participated in all phases of the project, and generally kept us organized.

Others we would like to thank for their assistance include: Roland Nelson, for arranging two of the pretest runs; Phil Kenny, John Duncan, and Gloria McGahey for providing participants and designing several versions of training programs for Looking Glass; Sheila Bell, Alice Warren, Joanne Ferguson, Norma Kay, Dawn Dunman, and Marvin Williams for secretarial and editorial assistance; Sarah Tucker, Frances Welborn, and Joann Vuncannon for coordinating the printing of numerous materials; Bob Koch and George Pawl for technical wizardry in design of the telephone system; Tom Bridgers and John Red for organizational and financial advice; and Vernon Odom and Margaret Pennybacker for research assistance.

Many individuals made substantive contributions to the content of the simulation. We would like to thank Nick Georgiades, David Molthrop, the late Alan Hundert, Karl Weick, John Red, Elizabeth Conklyn, Phil Kenny, Gloria McGahey, John Duncan, J. J. McMurry, and Robert Taylor.

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Preface

"The wonder and the wormwood of the whole."

- Thomas Hardy

Our bias reflected a psychological truth. Just as self cannot be accurately defined without others, managers without their organizations lose their being. They are both too sharply delimited and too fuzzily omnipotent. Most leadership research has looked at managers in this limited manner using, at most, only a few environmental factors and a limited organizational context.

In contrast, we wished to observe managers "on line," dealing with life's confusion. To do so, we sought funding from the Office of Naval Research to develop a management simulation. Our purposes were as follows: (1) to accurately simulate the managerial job, and (2) to learn about leader behavior and leader effectiveness in an organizational context. For example, what does planning or decision making look like in a complex environment?

In short, we set out to learn about the whole, or as much of the whole as a simulation can represent. This manual recounts two years of research and development effort sponsored by the Office of Naval Research and the Center for Creative Leadership.

With a project of this complexity and ambiguity, a useful way for the reader to begin is to understand what this manual is not.

Although reviews of the literature were conducted on organizational theory and structure, management/leadership research, and research, development and measurement issues surrounding simulations, the results of these will not be included.

The Office of Naval Research contract is in effect from September 1, 1976, to August 31, 1979. Year one focused on literature review and simulation design; year two on developing and pretesting the simulation; year three on collecting and analyzing the research data and publishing the results. As such, this manual contains only preliminary data.

What This Manual Is

While not an ideal model, the history of how we developed Looking Glass may serve as a guidepost to others who develop organizational simulations. We have reconstructed our slips and successes, assumptions and biases, the chronology of what occurred from original idea to final pretest run, and a summary of what we learned during the two years of development. These matters form the body of Section I, Development.

Looking Glass is intended as both a research and a training tool. Section II discusses research issues such as the experimental modes built into the design, possible manipulations, limitations of the simulation, measurement strategies, and preliminary hypotheses. Section III outlines some training uses for the simulation (applications are still under development).

The final section explains the nuts and bolts of running the simulation. This section and the appendices that follow are printed on darker paper to enable the user to quickly refer to staffing and administrative necessities.

Introduction

"Doing research is a rather informal, often illogical and sometimes messy-looking affair."

(Garner, Hunt, & Taylor, 1959;
cited in Weick, 1965, p. 253).

The origins of the project were informal and certainly illogical: a discussion at a cocktail party, a chance meeting at a conference, several runs of another management simulation one of us had developed. Out of this came the articulation of some biases about management and management research.

The vast body of leadership/management research has exposed few truths, perhaps because physical science and social science models do not bond easily. One tenet borrowed from the physical sciences is that pieces can be studied out of context, that fundamental laws underlie phenomena. This tenet works better for phenomena that can be touched or seen or smelled than with metaphysical concepts like leadership that rarely appear in observable chunks.

The most prominent chunk in recent years has been leader-subordinate relationships (e.g., Fiedler, 1967; House, 1971). Follower productivity, satisfaction and turnover are common criteria of leader effectiveness, implying that somehow they matter most. Perhaps the lack of consistently positive findings tells us, not that management-subordinate relations are unimportant, but that they are only part of a complex matrix. At the least, how subordinates feel about themselves and their leader is influenced by the tasks performed and the demands originating from both inside and outside the organization.

Evidence from a variety of sources casts further doubt on the validity of recent research directions.

Environmental Factors

Overwhelming external factors such as the economy, regulatory agencies, politics, competition, and labor unions can influence organizational outcomes more than organizational leadership (Lieberson & O'Connor, 1972; Pfeffer & Salancik, 1975; Salancik & Pfeffer, 1977, Note 1).

Leader Behavior

Within the organization, the major theoretical clusters of leadership behavior--consideration and initiating structure for the group--bear little consistent relationship to leadership effectiveness, even at a group outcome level (Kerr & Schriesheim, 1974; Korman, 1966). Although leadership is related to many behaviors, the relationships hold only in specific situations (Campbell, Dunnette, Lawler & Weick, 1970; Gibb, 1969, pp. 205-282).

Limits on How Much Leadership Matters

Management jobs are characterized by a lack of control over events and over the principals who contribute to the events. Many perceptions about leaders may have little to do with their performance. Pfeffer (1978, chap. 2) explains much of our thinking about leadership as attribution--the tendency of human beings to attribute outcomes to persons rather than to shadowy, environmental forces outside their control (see also Calder, 1977, pp. 179-205).

The Nature of the Managerial Job

The few studies (e.g., Dubin, 1962; Mintzberg, 1973; McCall, Morrison, & Hannan, Note 2) that describe what leaders actually do also question the leader-follower focus of leadership research. McCall et al. (Note 2) found that a manager's work is fragmented; episodes are brief and contacts varied. Although contacts with subordinates are the primary component of interaction, these contacts are the shortest in length. Leaders spend as much of their time with nonsubordinates (peers, colleagues, etc.) as with subordinates. Indeed, at the highest levels of organizations, they spend much of their time with outsiders.

The nature of the managerial job is a reactive one. Managers spend their days assimilating, sifting, and responding to fragmented, varied, and brief inputs. They suffer a constant overload of information, leaving little time for the calm, rational decision making or the cozy group techniques recommended by researchers and trainers. Managers operate in an atmosphere which can best be described as frenetic; ill-structured problems mingle capriciously with the cut-and-dried, and subordinates are simply one of many groups with which they interact.

Leader Effectiveness

If the managerial job is hectic, what would contribute to effectiveness under such conditions? Three attributes stood out as possible components (see Lombardo, Note 3): (1) The ability to break set, juggle opposites and contradictions, discriminate sharply between aspects of a problem, handle the accompanying stress and integrate problem dimensions in a novel way formed a complexity component, (2) the ability to set up feedback and judgment systems to deal with ill-structured problems formed a structural component, and (3) using social skills to control organizational events and priorities formed a power component.

Whether or not these were truths became an empirical question once the Office of Naval Research funded the project. Complexity, environmental impact, even leader-follower relationships could be examined as they occur, in a context. For all the convolutions to follow during the construction and pretesting of the simulation, our goal was simple and direct: to replicate reality as managers/leaders see it, and to find out what leadership is like in the complex setting in which it is enacted.

I. Development

Looking Glass: A Summary and Outline

"We can know what we've done only after we've done it. Only by doing is it possible for us to discover what we have done...it is entirely possible that the actors themselves create the environment to which they adapt."

(Weick, 1969, pp. 27, 64)

As Weick notes, we never know what we've done until after we've done it. A useful place to begin, then, is where we ended.

Looking Glass is a simulation of a glass manufacturing corporation with \$200 million in sales. There are twenty positions, ranging across three divisions and four levels (Plant Manager, Director, Vice-President, and President). The divisions face different environments, varying from volatile to stable.

Looking Glass is, in a word, typical. The organizational type, structure, and environments are common. The problems that managers face in the simulation are modeled on what they told us they face on the job.

The simulation is brief (six hours), portable (it can be shipped easily), and person-centered (noncomputer based). Looking Glass has a telephone system and a written communications system to aid participants. Status differences are emphasized through accoutrements and office sizes and locations.

There are no restrictions on participant behavior. Their instructions: Run Looking Glass for a day any way you choose. Make decisions and take breaks at your discretion.

Designed primarily as a research vehicle to generate hypotheses about managerial and organizational effectiveness, Looking Glass was successfully run five times, three of these with intact groups of managers. The development and pretesting phases (years one and two) are now over. Year three will involve at least ten identical runs of the simulation for research purposes.

The remainder of this section of the manual covers our progress to date and is organized into six units:

- (1) "The Nature of Simulation" explains the free simulation and its basic components of realism, participant involvement, and preservation of confounding elements.
- (2) "Biases" outlines our personal beliefs about what managers should do in a simulation and what was in the experience for us.
- (3) "Basic Decisions" explains how the project was organized and responsibilities delineated, then details our selection process for organizational type, structures, products and environments. To make the simulation as real as possible, we developed problem/activity clusters which reflect the managerial job, and included a simplified financial system.
- (4) "Designing Looking Glass" explains the criteria along which the simulation was written and lists six imperatives we felt were necessary to replicate reality. A rationale for the physical elements surrounding the simulation is also given.
- (5) "Running Looking Glass" discusses our relationship with outside organizations that provided the participants for the simulation, and outlines the five pretest runs and what we learned from them. The unit closes with six conclusions about the simulation.
- (6) "After the Deluge" contains some of our reflections on simulation and the nature of research.

The Nature of Simulation

A simulation is an operating model of a real system. The type of simulation we developed is classified as a free simulation. This is characterized by: (1) a complex environment that represents the actual setting as much as possible, (2) free behavior by participants, (3) interaction between participants and the environment (Fromkin & Streufert, 1976, chap. 10). Although start points, such as the information available and the organizational structure, are programmed by the designers, events that occur during the simulation are shaped primarily by the participants.

Simulations offer several advantages. They order events so they may be systematically studied, bringing the ongoing organization into the laboratory (readers interested in the advantages and disadvantages of simulation are referred to Drabek & Haas, 1967; Fromkin & Streufert, 1976, chap. 10; Guetzkow, 1962; Guetzkow, Alger, Brody, Noel, & Snyder, 1963; Guetzkow, Kotler, & Schultz, 1972; Stogdill, 1970; Weick, 1965, chap. 5). The advantages we focused on in our decision to design a complex organizational simulation were: (1) the reality of the setting, (2) high participant involvement, and (3) preservation of confounding elements (they are part of a natural setting).

Realism

As Weick (1965, chap. 5) argues, when a phenomenon (managerial work) is not well understood, then simulated realism should be high so observations can distinguish relevant from irrelevant variables. Drabek and Haas (1967) advise that a realistic simulation uses an intact group working on familiar tasks within a natural environment.

Realism, of course, has its disadvantages. Overcomplexity can lead to "pictorial realism" (Schultz & Sullivan, 1963, chap. 1). Drabek and Haas (1967) apparently faced this problem when they recreated an organization down to the correct placement of the coffee pot. We faced the same problem, to which there is no solution: How real is real? How much reality is enough?

Reality is also messy. Tight control over variables is both impossible and undesirable. So much behavior is generated as participants grapple with ill-structured situations

that an already fuzzy process becomes even more mysterious. Figuring out what participants are doing, or even which problem they are tackling, becomes a major issue.

Participant Involvement

The nature of the design insured participant involvement. The simulation was only to be run with managers from the same organization, facing typical tasks which they were free to attack in their usual manner. But would they? What we proposed to develop would be so real that our primary fear was overinvolvement of the participants, creating high stress. We knew from previous research that the managers would be accustomed to stress, that they might even enjoy the action, but would they in a new situation? Would we get their typical, back-home problem-solving behavior, or an array of defense mechanisms--denial, withdrawal, and aggression?

Artifacts

Simulations are skeletal reality. There are no products, no one will be fired or promoted. They are game-like in nature, and as such their reality depends on the tendency of people to enjoy complex experiences, to want to complete tasks, and to associate the simulation content with their actual job content. Simulations have artifacts as a given. Following are the most troublesome with which we dealt.

Paper crises. All problems given to participants at the start of Looking Glass appear in the form of memos (the failure of a plant to pass EPA inspection is an example). In an actual organization, managers learn of many problems over the phone or face-to-face. The decision to use memos exclusively was a trade-off between loss of reality and what were more important losses. By intervening (with a phone call, for example), we felt we would create strong experimenter demands to drop everything else and engage in crisis rather than typical behavior, upsetting the normal activity pattern of managerial work. Checking this assumption during a pretest run confirmed our fear--one phone call from a "reporter" resulted in three hours of activity on a minor problem by the entire organization.

Time. Simulations ordinarily compress time, either by forcing decisions or by providing enough information so that a decision is likely. Even though decisions must be made on

only two of over a hundred problems facing our organization, more decisions are made than in a typical day. Unlike life, the participants know that the simulation will not go on.

No subordinates. The lowest management level in Looking Glass is Plant Manager. Because the Plant Managers have no live subordinates, we faced the same problem that Cotton (1975) did--lack of involvement and alienation from the organization. We attempted to circumvent this by providing them with an array of problems, allowing them access to their plants and subordinates by telephone, and giving them high status (a \$50,000-a-year job and control over large budgets).

Demand characteristics. In any experiment, the inevitable question arises: Are participants behaving as they typically do, or as they believe they are expected to behave? In Looking Glass, we tried to lessen this effect by telling them there were no tricks--that they were to run the organization for a day any way they chose. They could make decisions or not, take breaks or remain at work. Then we crossed our fingers and hoped the reality of the simulation would elicit typical behavior.

Content of the job. Although we included memos and letters that concerned outsiders and allowed phone calls to them, we could not replicate the large percentage of time (Cohen & March, 1974; Mintzberg, 1970) that senior executives spend with external contacts.

Biases

About Management

We believed that management only has meaning when viewed in its entirety. Its pieces do not sum to a whole. Activities, problems, and organizational context are all basic to the management process.

A review of organizational simulations revealed only a few which deal with contextual issues (Drabek & Haas, 1967; Guetzkow et al., 1963; Olmstead, Cleary, Lackey, & Salter, 1973) and none that replicate the activity patterns suggested by observational studies of leaders. Major simulations have dealt with crises: Olmstead's with military attack, Guetzkow's with the outbreak of World War I, and Drabek and Haas's with civil disaster. Not only were the events less than typical, communication patterns were often restricted. In Guetzkow's INS, for example, participants basically communicated in writing.

We believed that face validity was essential. As such, the problems faced would be typical and participants could communicate as they chose. No gimmicks were needed. We felt the process of managing was exciting enough.

About Simulations

The failure of many simulations lies not so much in their design, but in their unwieldiness. We resolved that Looking Glass would have three attributes: (1) It would be brief (six hours), (2) it would be portable (could be shipped easily), and (3) it would be person-centered (noncomputer based).

Personal

The simulation content would be based on an empirical model rather than a theoretical one. Our emphasis was on generating representative behavior for explanation and theory-building. How this behavior was to be measured was left open. We started over in our review of the research, seeking the smallest number of dimensions with the greatest explanatory clout. There was no reason to restrict ourselves

in what we measured. The reality of the simulation would allow us to research almost any variable. If it distinguished between relevant and irrelevant or effective and ineffective, it would stay. If it failed, it failed.

To spend three years of our lives building and testing an organizational simulation meant that something had to be in the experience for us. We resolved to pick an organization we were interested in and let each of us author a piece of it.

The name we eventually chose for our simulation, Looking Glass, reflects, more than anything else, what was in the experience for us. Some have enjoyed the name, some have called it "cute." For us, it tells the story of the project. A looking glass reflects reality and deepens it because one can go through it. The words also imply a touch of whimsy.

Above all else, Looking Glass conveys a sense of what we were: professionals who cared about what they did and who also had fun.

Basic Decisions, or Research: A Squeaky Wheel

Greasing the wheel consisted of three decisions made before the project started in September, 1976:

- (1) Three literature reviews were to be conducted, with each of us responsible for one. They were to be eclectic with an emphasis on operational rather than transcendental properties of organizations. The areas to be reviewed were organizational theory/structure, management/leadership, and laboratory person-centered simulations. Consultants were expected to contribute further to our knowledge of the areas.
- (2) A management survey was to be conducted, using a mailed questionnaire to collect critical incidents in management. This was later scrapped in favor of field interviews.
- (3) A month-by-month timeline of the project forced us to get to work immediately. Presentations on our progress in reviewing the literature were scheduled and held the first week of October. By December, several follow-up sessions on the relevant literatures and visits from three consultants helped us toward making some hard choices. Karl Weick of Cornell encouraged us to ground portions of the simulation in existing research, but to go out on a limb on other aspects. Present organizations as they are, he advised--garbage cans with people operating under scarcity and against deadlines. Henry Mintzberg of McGill briefed us on five general organizational structures. A month later, Joseph Olmstead of HumRRO explained the development of FORGE, a military attack simulation of high complexity and varying stress levels.

In retrospect, what greased the wheel was the division of labor and the deadlines. Although not always successful (the first run of Looking Glass was scheduled for May, 1977--it actually occurred in February, 1978), they were always there in front of us--a clear responsibility and a date for making things appear.

Selecting an Organizational Type

The meaning of a "typical" organization broke down into two requirements: (1) credible to participants, and (2) practical for us to design. Credibility meant that whatever we

selected had to have an analog in the real world. The structure, environment, technology, and products had to exist. We wanted participants to feel they were producing something important, rather than frivolous or fictional goods such as widgets.

Further, we wanted an organization that managers were likely to have heard of but unlikely to have worked in. This argued for an older, fairly small industry, making common products. Since no detailed knowledge of the organization was to be necessary to run it, its jargon and processes had to be simplifiable.

The decision to simulate a profit-making organization was based on familiarity of organizational structure. Most managers are at least acquainted with for-profit setups, while many nonprofit organizations have unusual structures. Educational organizations, for example, are controlled by political agencies (legislatures and school boards). Hospitals are actually two organizations in one--the bureaucracy run by managers and the service run by professionals. Since we wanted participants to feel "at home," nonprofit organizations were ruled out.

Practicality of design required that we select an organization with identifiable environments and technologies, and a product line homogenous enough to be simulated. Although the organization must vary in what it produced to give us some leeway in design, the problems it faced must be generic to make it representative to participants. Personal contacts and information had to be available, and, above all, the organization had to be interesting to the staff.

Using Standard and Poors' classification of organizations, Business Week's surveys of corporate profits, and our knowledge of organization types, we narrowed a long list down to 22 organizational types with promise as "typical" organizations. These were: (1) publishing, (2) shipbuilding, (3) toys, (4) sporting goods, (5) oil service, (6) food products, (7) recreation, (8) motor freight, (9) air freight, (10) broadcasting, (11) paper, (12) measuring instruments, (13) ceramics, (14) airlines, (15) glass, (16) prosthetics, (17) oil field machinery, (18) metal casting, (19) forestry, (20) fishing, (21) cargo, and (22) lumber.

What caused a problem was our declaration that the organization would be interesting. For a time we forgot this meant interesting yet unfamiliar. After discussion and comparison, the interesting and the familiar, recreation won easily. (Neither glass nor its cousin ceramics received a

single vote of the 18 cast.) Retrospective matching of the recreation industry against the criteria of credibility and practicality revealed some potential problems. We met to discuss the situation, realizing that if we made an error now, recouping later would be impossible. Our basic fear was that the simulation would bomb. "It's too familiar," one of us finally said. "All we'll get is six hours of why I like Winnebagos and Head skis." That settled it--whatever we chose, it wouldn't be recreation.

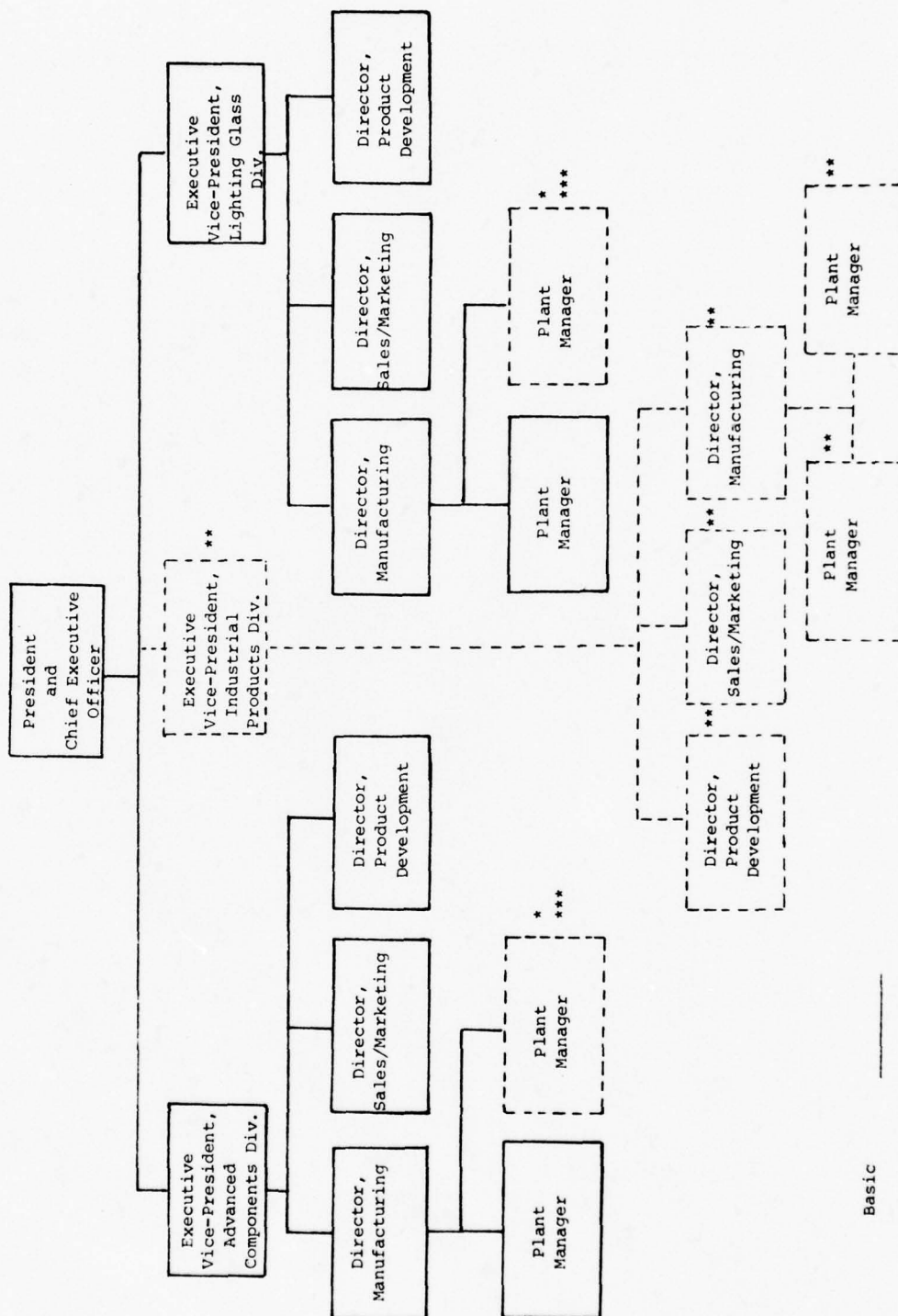
Under the clarified emphasis, unfamiliar yet interesting, two finalists emerged--shipbuilding and glass. We brought in two ex-managers to explain the nature of each organization. David Molthrop spoke on shipbuilding, Alan Hundert on glass. As a result of their extensive presentations on environments, technologies, structure, and products, the decision became obvious. Glass was more versatile along all the criteria.

Selecting an Organizational Structure

Using charts from several organizations in the glass business, charts from other types of organizations, and "ideal" models from the literature, two structures were drawn for the simulation. Both structures were adaptable--with minor changes in managerial titles and events, the structure could be switched from divisional to functional across runs.

Our original design called for eleven to sixteen roles in either two or three divisions spread across four levels--President, Vice-President, Director, and Plant Manager. As we interviewed incumbents of these positions, we began to have compunctions about our structure. The organization was diamond shaped rather than pyramidal (see Figure I-1). Some of the major problems we wished to include would not flow well from one Plant Manager through three Directors to one Vice-President. We grappled with this problem throughout 1977, deferring the final selection of live roles until our field interviews were completed. One theme permeated our thinking during this period: To be real, the simulation would need closer to 20 live roles and an unspecified number of "ghost" roles to make the organization more pyramidal. Otherwise, we would have top managers with no one to supervise.

Figure I-1



Selecting Environments

Picking a typical organization to simulate was a trivial problem compared with selecting environments. Environment, as one of us said, is conceptually equivalent to "everything" and "they." "If you don't know what causes an unusual behavior, pin it on the environment. It wears blame well." Our goal was to have each of the divisions face environments that varied along criteria such as volatility, degree of competitiveness, and nature of the markets. This resulted in three clusters corresponding with our three divisions: (1) volatile, (2) moderately unstable, and (3) stable.

Classifying products according to the stability/instability of their environments was straightforward. Our initial choice did not differ appreciably from the eventual outcome:

<u>Division</u>	<u>Products</u>	<u>Environment</u>	<u>Use</u>
Advanced Components	integrated circuits, resistors, capacitors, optical fibers, laser components	volatile	basic
(became Advanced Products)			
Industrial Glass	industrial piping, insulation, glass tape reels, safety windows, waste recovery systems	moderate	optional
Lighting Glass	casings for incandescent and fluorescent lights	stable	basic

(became Commercial Glass)

What vexed us was how environments differ.

Q: What are relevant dimensions of environment?

A: Everything except my family, and they will appear in the next article.

With no agreement on basic dimensions, we searched for a theme and found it in environmental uncertainty. Uncertainty consisted of two dimensions: static vs. dynamic and simple vs. complex.

Static vs. dynamic. The two major elements seemed to be rate of change (how often factors change or new ones need to be taken into account) and hostility (rapidity of required response, pressure from competitors, customers, government, and scarcity of raw materials) (Duncan, 1972; see Figure I-2).

Simple vs. complex. How many elements are relevant to the organization and how many classes do they represent? The former consisted of sheer number, the latter a hodgepodge of elements (e.g., customers, raw materials, government regulators).

Complexity of environment did not become a variable. We spoke with no one who worked for a major organization that could be classified as facing a simple environment.

The elements that stood out as important environmental components were:

(1) Legal/regulatory factors: legislation; federal, state, and local agencies; professional and/or trade associations; and industry standards.

(2) Pseudo-member factors: Board of Directors; stockholders; and financial institutions.

(3) General socio-economic factors: interest rates; political conditions; GNP; military, consumer, construction, and education spending; cultural, social, and community norms; special interest groups; and public opinion.

(4) Input factors: suppliers (number, reliability, strikes); raw materials; fuel; leasors; labor supply; and investors.

(5) Throughput factors: technological innovation; patents; impact on physical environment; equipment condition and availability; labor mobility; unions; and subcontractors.

(6) Output factors: customers (number, reliability, strikes, cycles); competitors; and markets.

(McCall, Note 4)

Figure I-2

Characteristics of Various Environmental States

	<u>Simple</u>	<u>Complex</u>
	CELL 1: Low Perceived Uncertainty	CELL 2: Moderately Low Perceived Uncertainty
STATIC	<ol style="list-style-type: none"> 1. Small number of factors and components in the environment 2. Factors and components are somewhat similar to one another 3. Factors and components remain basically the same and are not changing 	<ol style="list-style-type: none"> 1. Large number of factors and components in the environment 2. Factors and components are not similar to one another 3. Factors and components remain basically the same
	CELL 3: Moderately High Perceived Uncertainty	CELL 4: High Perceived Uncertainty
DYNAMIC	<ol style="list-style-type: none"> 1. Small number of factors and components in the environment 2. Factors and components are somewhat similar to one another 3. Factors and components of the environment are in a continual process of change 	<ol style="list-style-type: none"> 1. Large number of factors and components in the environment 2. Factors and components are not similar to one another 3. Factors and components of environment are in a continual process of change

Reprinted from "Characteristics of Organizational Environments and Perceived Environmental Uncertainty" by R. B. Duncan, published in Administrative Science Quarterly, 1972, 17, p. 320, by permission of Administrative Science Quarterly.

Boiled down to operational terms, the environments faced and the resulting divisional characteristics were:

<u>Advanced</u>	<u>Industrial</u>	<u>Commercial</u>
(volatile)	(moderate)	(stable)
heavy competition, exotic materials, costly processes, dependent on innovation, connected w/military spending, contract-oriented, diverse product line, many markets, specializing in precision, unpredictable profits, products obsolete quickly, crises common, high pollution costs, brief history	tied to consumer and government spending, diverse products, unreliable customers, some exotic materials, sales ceilings, foreign competition, customers take over technology, profit margins erode	few customers, long history, some competition, high volume, certain market, tied to GNP, slowly changing technologies, products are essential, forecasts stable

Objectives:

<u>Advanced</u>	<u>Industrial</u>	<u>Commercial</u>
specialize in precision market, customer service	respond to customer tastes	reduce costs to maintain market position

Selecting Variables: The Black Cat

The popular image of researchers is one of scientific detachment as they sift through the literature, coolly selecting the relevant and discarding the irrelevant through dispassionate analysis. Something like this occurs on topics that can be delimited; on others, like Looking Glass, the process resembles a free-for-all. We far more resembled children digging for clams ("We got one!") than anything approximating the precision of a Sherlock Holmes.

Our search for truth, or what might be true, consisted of regular meetings throughout 1977. During these we presented and reacted to summaries on power, political behavior,

feedback, organizational structure and environment, cognitive complexity, and the leadership effectiveness literature. Many variables died writhing under questions such as "How is this unique? What will it tell us? How will we capture it? We can only measure a few dimensions. Is this one central?" Often the sessions left so many discarded bodies that one of us dredged up Kierkegaard's definition of truth: Sitting in a dark room looking for a black cat that isn't there.

"I know what you're thinking about," said Tweedledum, "but it isn't so, no-how." "Contrarwise," continued Tweedledee. "If it was so it might be; and if it were so, it would be; but as it isn't, it ain't. That's logic."

Lewis Carroll,
Through the Looking Glass

Problem/activity clusters. The face validity of Looking Glass comes in large part from our decision to discard a questionnaire survey of managers and conduct field interviews. All problems which managers face in the simulation are modeled on what they told us they faced on the job. The structure of the interviews, conducted primarily with glass industry managers between April, 1977, and February, 1978, consisted of what they do in a typical day--process and content (see Figure I-3). Twenty-five interviews were conducted, the most relevant ones in two major glass corporations. Positions interviewed ranged in level from Plant Superintendent to President. Interviews lasted from ninety minutes to over two hours.

Working with interview notes, we extracted and listed 200 events and problems on index cards. Five of us then independently sorted these cards according to apparent similarity, without a priori categories. The sorts were compared, disagreements battled out, and 12 activity clusters generated (see Figure I-4; for a similar clustering, see Mintzberg, 1973). The clusters were used for two purposes: (1) to insure a representative set of demands during scripting, and (2) to form a series of dimensions along which problems and activities varied.

Figure I-3

"Typical Day" Interview Guide

- I. Introduction
 - Self
 - CCL (if necessary)
 - ONR Project
 - Confidentiality
 - Outline of interview
- II. General Description of Job
 - Basic responsibilities
- III. Typical Day
 - Can be real or hypothetical day
 - Hour-by-hour account (what-who-when-why)
 - Only enough detail to be understandable
- IV. Details
 - Probe specific events in day
 - Content, relationships, frequency, regularity
- V. Differences
 - How would other days differ
 - Larger perspective (time traveling, cyclical events, etc.)
- VI. Thanks
 - Executive summary
 - Possible future involvement (observe simulation, comment on events, participate, etc.)

Figure I-4

Problem/Activity Clusters

<u>Activity</u>	<u>Definition</u>	<u>Examples</u>
1. Symbolic	Activities in which the manager represents symbolically or ceremonially the unit or organization	Going to anniversary dinners, attending retirement parties, making speeches, joining civic organizations
2. Staff development and education	Deciding on and arranging for educational and developmental activities for oneself, one's staff, or the organization; also performing mentor roles	Requesting OD help; picking university courses; detecting lack of financial education in the organization; meeting with consultants or taking personal time to help staff
3. Monitor	Gathering information on the progress of work; looking for deviations	Visiting production sites; reviewing engineering strategies, subordinate performance, financial and production statements
4. Disseminator	Informing others of unit or organizational activities; basic information sharing	Budget reports; informing other divisions of activities; distributing statistical summaries on departmental issues; explaining sensitive issues to those concerned
5. Entrepreneur	Find or create opportunities to improve work activities	Examine requests for new products, proposals to diversify product lines, new advertising campaigns; prepare competitive bids; invest in land or other corporations; take greater advantage of tax credits

- | | | |
|----------------------------|---|---|
| 6. Resource Allocation | Using available resources (human, technical, mechanical, physical, financial) for work accomplishment | Project planning; arranging loans; interview job candidates; staffing arrangements after transfer or promotions; sub-contracting |
| 7. Hip Shots | Taking immediate action in response to a serious problem | Cost over-runs; change in sales or production forecast; pollution or affirmative action problems; emergencies (strikes, fires, etc.) |
| 8. Persuasion | Using influence to gain some control over forces which are not directly controllable | Choosing Board nominees; testifying at trade associations; selling new products internally; negotiating contracts; requesting major expenditures; negotiating with government officials; finding adequate housing for employees; getting community improvements |
| 9. Structuring and Design | Changing organizational structure to improve work processes | Reorganize divisions; set up depreciation or budgeting procedures; set up reporting relationships, staff meetings, etc. |
| 10. Routine Administration | Taking care of formal requirements | Reviewing applications; in-basket materials; MBO reviews; coordinate paperwork; estimate cost and issue purchase orders on routine matters |
| 11. Network Construction | Joining or participating in activities to create potentially useful contacts | Serving on external boards and in community groups |
| 12. Nuisances | Time-consuming events not directly related to organizational goals | Customer complaints; phones out of order; interruptions |

Activity variables. Using previously published taxonomies of tasks (Shaw's, 1973, classification, for example) proved simultaneously too limiting and too general. The problem/activity clusters we developed were too complex for any of the standard task taxonomies. After another series of meetings, we developed our own to capture the complexity of what managers do (see Figure I-5). These variables were used: (1) to ensure variability within and across managerial roles, and (2) as a guide for selecting and classifying problems.

Other variables (outcome and process, for example) have not been selected as of this writing. For a discussion of these issues, see Section II.

Financial Data

Although one of us admitted dropping accounting during college, none of us had any background in finance or accounting practices. Early on, we realized that without some financial data the simulation would be a farce. The managers we interviewed for this project understood and used numbers as common parlance. As a bank manager told us, "I feel naked without my profit ratios."

Since we were inadequate to the task, we asked Robert Taylor of Duke University to guide us in constructing a simplified financial management system. (Later, we also relied heavily on the advice of J. J. McMurtry of the Smith Richardson Foundation and Center for Creative Leadership.) He introduced us to such arcane entities as balance sheets, debt/equity ratios, and cost of goods manufactured. Our goal was to include the key figures managers use to flag problems at the plant, divisional, and corporate levels.

Figure I-5
Activity Variables

1. Interdependence

- Others have information necessary to defining the problem or to finding an appropriate solution.
- Others are directly affected by the decision, e.g., they control inputs or outputs or share a common fate.
- Solving the problem or engaging in the activity requires the help of others.
- Procedures require that others be involved.

2. Difficulty

- Problem is unclear or changing.
- Problem is interdependent
- Problem has many elements or pieces
- Elements are diverse.
- Solution requires persuasion.
- Actor has partial or no control over the elements.

3. Magnitude

- The way the problem or activity is handled will influence in a big way people, money, etc.
- The problem is highly visible.

Designing Looking Glass

By late 1977, our offices resembled back rooms in a library. Each of us was armed with stacks of miscellany: notes on interviews, plant tours, glass technology, history of glass-making, annual reports, financial and business reports, glass industry articles, explanations of terms like electrostatic precipitators, and the inevitable potpourri of textbooks.

Each of us was assigned to design one of the divisions. In writing, we were to include: (1) relevant environmental constraints, (2) major strategic and operational problems, (3) cross-divisional problems, (4) division history and product information, and (5) relevant facts and figures. In addition, the problems were to be arrayed according to our management activities clusters.

Not by design, one of us went first. The other two investigators were meeting another contract deadline. This serendipitous occurrence helped in several ways: It provided a process for the others to follow, and it taught us some things to do.

A Process

Our point man laid out the major problems faced by the division and by each position in outline form. The problems were then checked for interdependency, difficulty, and magnitude (activity variables), compared with the 12 activity clusters to ensure representativeness, and ranked according to decision probability. He then forgot about the above and dictated for seven days. His premise was, if the division were laid out correctly, the outcome would be close to what was intended; if not, no amount of tinkering during writing would help.

This premise was borne out several weeks later when each problem was rated against the criteria listed above. The Advanced Products Division, on paper at last, came out as volatile with high interdependence requirements, forcing managers to engage in the kinds of activities their normal jobs demand.

Even the psuedo-rational design of APD was later felt to be overstructured. We decided that, after a year of

research, we finally understood what we wanted to develop. The other investigators simply detailed their environment, laid out the problem structure, and wrote.

Things to Do

To replicate reality, there were several imperatives:

(1) Hide the critical among the irrelevant. We found no evidence that problems come wrapped in packages with red warning flags attached, or that they arrive in any intelligible sequence.

(2) Throw clinkers in the furnace. The management job takes place amidst any number of annoying events. During a typical day, there will be rumors, memos going to the wrong people, staff unavailable because they are in a scheduled meeting or on vacation, and information which could be but has not been found. Although we did not deliberately make Looking Glass chaotic, we sprinkled in a few annoyances for reality's sake.

(3) Be lively. Since each participant had to read the 35-50 memos we placed in each in-basket, we kept the memos brief and conversational. Corporate memos are often dull. We tried to make ours interesting and well-written to prevent participants from dozing off.

(4) Keep it simple. Although the temptation to be deviously complex was at times overwhelming, we resisted this as much as possible. The nature of the job, the complexity of human interaction, and the uncertainty associated with many of the problems made the managers' tasks devilish enough. Avoiding overcomplexity probably contributed greatly to the eventual success of the simulation. Where we did succumb to our proclivity to complicate, the problems were so obscure that they went unnoticed.

(5) Spread information around and outside the organization. Much useful information arrives from staff specialists, customers, competitors, and field representatives. We included a high percentage of memos and letters from these "ghosts." One "ghost," the Corporate Controller, had such a volume of critical information that 20-30 percent of the telephone calls and memos to outsiders went to that "position."

(6) Let the financial system reflect, not create problems. We selected numbers that indicated what was already known via memo. For those familiar with cost accounting, the figures could be used and others requested; for those unfamiliar, explanations were provided. Regardless, the problems could be attacked either way. If, for example, a plant had production problems, these same problems popped up in the financial data. If production was running smoothly, the numbers were blandly on target. In short, there were no surprises in the numbers.

The Context

The physical elements surrounding the simulation serve three basic purposes--ease of communication, emphasis of status differences, and representation of reality.

The telephone system. The telephone is an integral part of a manager's life and one method of collecting unobtrusive data on interaction patterns. Two Center staff technicians built a 20-phone system with a central switchboard so we could record calls, tape them automatically, and permit contact with "ghosts."

Communications system. We included routing slips and pressure-sensitive NCR paper to enable managers to communicate almost as easily as they would on the job. For example, by stacking five sheets of NCR paper and clipping on a routing sheet, a manager could write one memo with four carbon copies that we would then deliver during mail pickups.

Accoutrements. We provided office locations, desk plates, ash trays, and pen sets according to the status of the position. The President, for example, received a blotter, pen set, large ash tray, expensive desk plate, and the largest office (or work area).

The Result

What we created was as close to what we expected as any plan usually produces. The number of participants changed from variable to fixed--20 for all research runs. The two or three divisions became three. The answers from "ghosts" who provide additional information became formalized in an outside information notebook.

For our own use, we catalogued the 800 pages of simulation materials into 3 kinds of notebooks for each division: (1) by-Problem for analysis, (2) by-Number for easy reference, and (3) by-Position for setup of the simulation.

Running Looking Glass

Organizational Contacts

We contacted several organizations with whom we had worked and briefed them on what we proposed to do. Representatives of three--First Union National Corporation of Charlotte, North Carolina; Green Giant Corporation of Chaska, Minnesota; and the State of Minnesota--expressed enough interest to participate.

We asked them to provide 20 middle- and upper-level managers as participants in what was designed as a research, not a training, vehicle. In other words, we asked them to take a gamble that we had built something useful in a training mode. Philip Kenny of First Union and Gloria McGahey of Green Giant later said they took the risk because the simulation was "98 percent real," had unlimited training uses, and particularly because they were sick of piecemeal approaches to management development. Both had been looking for a systems approach for some time, and Looking Glass was the candidate of choice.

In exchange for participants, we helped them develop a one-day debriefing on the simulation. This represented an operational definition of its management development implications. Again, a division of labor was arranged with responsibility for running Looking Glass resting with us, responsibility for the training program resting with them.

Paranoia

By late January, 1978, we realized that the basic research and design phase was over. Although the project had run smoothly, we were scared. Now we had nowhere to hide--others were going to pass judgment on Looking Glass.

"Let the jury consider their verdict," the King said, for about the twentieth time that day.

"No, no!" said the Queen. "Sentence first--verdict afterwards."

Lewis Carroll,
Alice's Adventures in Wonderland

The Pretests--Crossed Fingers

During February and March, 1978, we ran Looking Glass twice, first with two divisions, later with all three. Graduate students participated in the two-division version; school administrators and four corporate personnel people went through the full run.

Quite simply, the simulation worked. Participants stayed occupied and in role. It was amusing and gratifying to hear them discuss the sale of the integrated circuits plant over lunch. Although a few were overwhelmed, no one quit, and most genuinely tried to identify and solve the organization's problems. The array of defensive mechanisms we hypothesized rarely surfaced.

Our fears were allayed that they had too much to read or that the problems might be too subtle (or simple). With a few exceptions, the problems and roles ran as expected.

Once our anxieties calmed, we came to the following realizations:

- (1) A debriefing was critical. We had only a cursory session after the initial runs, and the experience lacked closure for participants.
- (2) The simulation was logistically sound.
- (3) Additional problems should be added, particularly for some of the Plant Managers who were clearly underwhelmed.
- (4) The financial system needed further development.

Running with Managers

In early May, we packed our materials, accoutrements, and the telephone system, and took them to Charlotte, North Carolina, for the run with First Union bank managers. Their level varied from Branch Manager to Corporate Controller. The day before the run, we moved work space dividers, placed in-baskets at their stations, and taped countless lengths of telephone cable to the floor. Far into the night we fretted over simulation logistics and the content of the debriefing day.

Two hours after they began, nothing had happened and we were looking for an exit. The simulation had worked with

nonbusiness managers, but now that we confronted the real thing, Looking Glass was faltering.

Was it the managers? The nature of banking? Or was the simulation no good? Maybe it couldn't be done after all. Later, we were to understand the lesson of those painful hours--Looking Glass was real. What we were observing was typical behavior for this group of bankers--nonplussed, conservative, gathering the facts, and then acting. One manager summed up this tendency during the debriefing. "We bankers don't specialize in quick decisions. This isn't a crisis organization. We appoint committees, study the problem, and take our time."

Although weeks passed before we fully realized it, we also learned that Looking Glass has powerful developmental effects. Several of the participants later wrote letters detailing the value of the simulation.

Had we been savvy, we would have hypothesized this power immediately following the simulation. The denial of the experience was violent and the ratings of its value low. Rather than musing about the reasons for the denial, however, we reacted to the managers--we sought to deny their denial. A more productive approach might have been to remember that the strength of a defense often equals the strength of the conflict--in this case, over their effectiveness as managers. In lay terms, Looking Glass struck a nerve. Once managers had an opportunity to reflect, their feelings changed, and some of them identified areas of management they wished to improve.

Following our first road run, we tinkered with the simulation, particularly with the financial system. Although it didn't leak too badly, some extra caulking was needed before we faced Green Giant managers in early June. Here was the crucial test--the top management team in a food processing organization asked to do in a simulation precisely what they do for a living.

The logistics this time were exponentially more difficult. All materials and the phone system had to be shipped via air, and we wondered if our trunks would arrive with contents intact. That they did indicated that another of our goals had been attained--the simulation was portable.

If the First Union run was one of frantic worry, the Green Giant run was one of frantic frenzy. None of us had time to worry--we estimated that we observed less than 10 percent of the 6-hour simulation. The switchboard buzzed

at a near-incessant rate as the managers conferred with each other and demanded information from the "ghosts." The pressure on the "Corporate Controller" was so great (approximately 30 requests for data) that he left the building to figure out how to respond to the clamor.

Where the bank managers had considered, the manufacturing managers acted. The President called a meeting of the Vice-Presidents to get organized before Looking Glass officially opened (participants have 45 minutes to read their in-baskets before the switchboard is placed into operation).

The early meeting set off a chain reaction of meetings down the hierarchy as Green Giant attacked the simulation content. The incredible pace the manufacturing managers set frankly left us dazed by day's end.

The effects of the simulation again exceeded our expectations. Once the debriefing began, the managers were as demanding on themselves as they had been on us. When a major operating problem was discussed, one participant admitted disappointment with his performance and asked his colleagues for help. What followed was an intensive examination of how decisions are made within a unit of Green Giant, using Looking Glass as an example.

The other main effect occurred the day after the simulation when one of our consultants, Nick Georgiades of the University of London, explained the results of the organizational climate survey. The managers were skeptical about the transferability of the results to Green Giant. Georgiades suggested that they take the survey again, responding this time in reference to Green Giant. The resulting correlation was .76, with all departures from the mean in the same direction. The value of Looking Glass as a mirror and as a looking glass was again confirmed.

The next day we ran the simulation again. None too wisely, we had scheduled back-to-back runs, dooming ourselves to 5 consecutive 16-hour days. Managers from the State of Minnesota, including finance, transportation, and education agencies, participated. Again, organizational differences emerged. The state government managers tackled a large number of the problems through the medium of the memo. Interaction was low, group discussions rare.

Later, this was explained to us as the behavior they felt was demanded in governmental work. Documentation was

described as critical, even though many expressed dissatisfaction with this modus operandi. Of the groups, they appeared most eager to change and readily discussed alternative patterns of managerial behavior.

Conclusions

As we left Minnesota, high and exhausted described us well: high because the simulation flew, and exhausted for obvious reasons. Six conclusions seemed warranted:

(1) Looking Glass is robust--it is meaningful even for non-industrial managers.

(2) Organizational differences in management approach are reflected in behavior during the simulation.

(3) When coupled with a debriefing/training segment, the simulation can be a powerful learning tool.

(4) Looking Glass can be used with intact or stranger groups, although the experience takes on a different form.

(5) Because Looking Glass is powerful, it can be personally upsetting. About 10 percent of the participants needed private time with staff to work on management issues during the 5 pretest runs. Understanding and possible change begins with awareness, and that awareness is almost always painful. Qualified counselors are an absolute must any time the simulation is run.

(6) The simulation generates "real" managerial behavior in an organizational context. The behavior of managers in Looking Glass is, on the whole, representative of their behavior back on the job.

After the Deluge

Another of our unspoken biases is that if a simulation is not firmly anchored in the real world, then it cannot produce valid data. This means that Looking Glass, in all honesty, was a long shot from the beginning. We knew, whether or not we cared to discuss it, that it might have to be pitched in the waste basket. Although we believed it would replicate reality, congruence between belief and fact is not always achieved. That it did succeed caused us to feel like children for a time--we dug for clams and we got one.

Still, that it replicates reality is only a beginning. What reality will tell us about managers and their organizations is another matter. The clams may be difficult to find once we subject Looking Glass to more rigorous examination. What follows is a summary of our learning to date.

Simulation: A Limited Experience

The strengths of a realistic simulation outlined elsewhere are counterbalanced by inherent weaknesses. Some roles are more demanding than others; regardless of the introductory briefing, some participants bring assumed constraints with them; and some groups, particularly strangers, start slowly, stalking each other for hours.

Because Looking Glass is close to reality, it is as unpredictable, chaotic, and hard to measure as a real organization. The following quotation captures our feelings from observing participants during Looking Glass and wondering how scientists can ever capture the complexity of human experience:

"Their lives were too human for science, too beautiful for numbers, too sad for diagnosis, and too immortal for bound journals. Human beings need science, but science never does human beings justice."

(Vaillant, 1977, p. 11)

Simulation as a Management System

In developing a simulated organization, we created three organizations of our own: Looking Glass, the research team, and our team of trainers and consultants. Each took on both a separate and a related existence. Because our energies were devoted to creating Looking Glass, we relied on others to see beyond its boundaries into other vital areas, such as training, marketing, and its legal restrictions.

Two years after our initial meeting, we had constructed an elaborate system: one concerned with training, organizational contacts, even the printing of our materials. Suddenly, we realized something--we were acting just like managers. The simulation had come full circle.

Research: A Personal Experience

As admitted elsewhere, our choices were not always programmatic. Often we worked as most managers do--intuitively. We missed deadlines, did more than one task backwards, and reacted strangely under stress. We referred to ourselves as available souls at the beginning of the development, available bodies toward the end. We succumbed to intimations of immortality, at one time almost dumping the title Looking Glass and substituting some combination of our names. McLode, Gadami, and McLomde Glass all received consideration.

In explanation, we can only offer a not particularly profound thought: Research is not only a scientific experience; it is also a personal one.

"It's no use talking about it," Alice said, looking up at the house and pretending it was arguing with her. "I'm not going in again yet. I know I should have to get through the looking-glass again--back into the old room--and there'd be an end of all my adventures."

Lewis Carroll,
Through the Looking Glass

Reference Notes

1. Salancik, G. R., & Pfeffer, J. Constraints on administrator discretion: The limited influence of mayors on city budgets. Unpublished manuscript, University of Illinois at Urbana, Department of Business Administration, 1975.
2. McCall, M. W., Jr., Morrison, A. M., & Hannan, R. L. Studies of managerial work: Results and methods (Tech. Rep. No. 9). Greensboro, N.C.: Center for Creative Leadership, 1978.
3. Lombardo, M. M. Looking at leadership: Some neglected issues (Tech. Rep. No. 6). Greensboro, N.C.: Center for Creative Leadership, 1978.
4. McCall, M. W., Jr. Elements of organizational environments. Unpublished manuscript, 1977. (Available from Center for Creative Leadership, 5000 Laurinda Drive, P.O. Box P-1, Greensboro, N.C. 27402.)

References

- Calder, B. J. An attribution theory of leadership. In B. M. Staw & G. R. Salancik (Eds.), New directions in organizational behavior. Chicago: St. Clair, 1977.
- Campbell, J. P., Dunnette, M. D., Lawler, E. E., III, & Weick, K. E., Jr. Managerial behavior, performance, and effectiveness. New York: McGraw-Hill, 1970.
- Cohen, M. D., & March, J. G. Leadership and ambiguity: The American college president. New York: McGraw-Hill, 1974.
- Cotton, C. C. When is reality not enough? The realism paradox in the simulation of a hierarchical organization. Teaching of Organizational Behavior, December 1975, pp. 25-28.
- Drabek, T. E., & Haas, J. E. Laboratory simulation of organizational stress. American Sociological Review, 1967, 34, 223-238.
- Dubin, R. Business behavior behaviorally viewed. In G. Strother (Ed.), Social science approaches to business behavior. Homewood, Ill.: Dorsey & Irwin, 1962.
- Duncan, R. B. Characteristics of organizational environments and perceived environmental uncertainty. Administrative Science Quarterly, 1972, 17, 313-327.
- Fiedler, F. E. A theory of leadership effectiveness. New York: McGraw-Hill, 1967.
- Fromkin, H. L., & Streufert, S. Laboratory experimentation. In M. Dunnette (Ed.), Handbook of industrial and organizational psychology. Chicago: Rand McNally, 1976.
- Gibb, C. A. Leadership. In G. Lindzey & E. Aronson (Eds.), The handbook of social psychology (Vol. 4, 2nd ed.). Reading, Mass.: Addison-Wesley, 1969.
- Guetzkow, H. (Ed.). Simulation in social science: Readings. Englewood Cliffs, N.J.: Prentice-Hall, 1962.

- Guetzkow, H., Alger, C. F., Brody, R. A., Noel, R. C., & Snyder, R. C. Simulation in international relations: Developments for research and teaching. Englewood Cliffs, N.J.: Prentice-Hall, 1963.
- Guetzkow, H., Kotler, P., & Schultz, R. (Eds.). Simulation in social and administrative science: Overviews and case-examples. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
- House, R. J. A path goal theory of leader effectiveness. Administrative Science Quarterly, 1971, 16, 321-338.
- Kerr, S., & Schriesheim, C. Consideration, initiating structure, and organizational criteria--an update of Korman's 1966 review. Personnel Psychology, 1974, 27, 555-568.
- Korman, A. K. "Consideration," "initiating structure," and organizational criteria: A review. Personnel Psychology, 1966, 19, 349-361.
- Lieberson, S., & O'Connor, J. F. Leadership and organizational performance: A study of large corporations. American Sociological Review, 1972, 37, 117-130.
- Mintzberg, H. Structured observation as a method to study managerial work. The Journal of Management Studies, 1970, 7, 87-104.
- Mintzberg, H. The nature of managerial work. New York: Harper & Row, 1973.
- Olmstead, J. A., Cleary, F. K., Lackey, L. L., & Salter, J. A. Development of leadership assessment simulations (HumRRO Tech. Rep. 13-21). Alexandria, Va.: Human Resources Research Organization, September 1973. (NTIS No. AD-772 990)
- Pfeffer, J. The ambiguity of leadership. In M. W. McCall, Jr., & M. M. Lombardo (Eds.), Leadership: Where else can we go? Durham, N.C.: Duke University Press, 1978.
- Pfeffer, J., & Salancik, G. R. Determinants of supervisory behavior: A role set analysis. Human Relations, 1975, 28, 139-154.
- Salancik, G. R., & Pfeffer, J. Who gets power--and how they hold on to it: A strategic-contingency model of power. Organizational Dynamics, 1977, 5(3), 3-21.

- Schultz, R. L., & Sullivan, E. M. Developments in simulation in social and administrative science. In H. Guetzkow, P. Kotler, & R. L. Schultz (Eds.), Simulation in social and administrative science: Overviews and case-examples. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
- Shaw, M. E. Scaling group tasks: A method for dimensional analysis. JSAS Catalog of Selected Documents in Psychology, 1973, 3, 8. (Ms. No. 294)
- Stogdill, R. (Ed.). The process of model-building in the behavioral sciences. Columbus: Ohio State University Press, 1970.
- Vaillant, G. Adaptation to life. Boston: Little, Brown, 1977.
- Weick, K. E. Laboratory experimentation with organizations. In J. G. March (Ed.), Handbook of organizations. Chicago: Rand McNally, 1965.
- Weick, K. E. The social psychology of organizing. Reading, Mass.: Addison-Wesley, 1969.

II. Research Implications

Research Implications

What worries me is that some of the least important realities about leaders are being accorded some of the largest amounts of attention. I think we need to spend more time watching leaders "on line," whether that line is simulated or real. We have to put ourselves in a better position to watch leaders make do, let it pass, improvise, make inferences, scramble, and all the other things that leaders do during their days between more visible moments of glory.

(Weick, 1978, p. 60)

Looking Glass was developed as a "simulated line" to aid researchers in formulating interesting questions about leadership in organizations. We have elaborated elsewhere on some of the gaps we see in existing leadership research (McCall, 1977, pp. 375-386; McCall & Lombardo, 1978, pp. 3-12, 151-165; Lombardo, Note 1), and Looking Glass attempts to fill some of those gaps by:

- (1) providing a face valid, holistic context for observing leadership,
- (2) systematically varying the environmental inputs to leaders,
- (3) using as stimuli actual problems faced by managers in organizational settings, and
- (4) allowing participants to respond to stimuli in an unprogrammed way.

This section describes some of the research uses we see for Looking Glass. These include questions that were built in during the design of the simulation, some basic areas of leadership and organizational behavior that are observable in the simulation, and possible manipulations during simulation runs. In addition, this section reviews several measurement strategies appropriate for Looking Glass and reports some preliminary data collected during pretest runs.

Like other research methods, simulation is not the answer for all research issues. Its pros and cons have been explored at length (see, for example, Fromkin & Streufert, 1976, chap. 10; Schultz & Sullivan, 1972, chap. 1; Weick, 1965, chap. 5; Zelditch & Hopkins, 1961, pp. 464-478), and

it is not our intention to renew the debate here. We feel that simulations, particularly free simulations (Fromkin & Streufert, 1976, chap. 10), have received less attention than they deserve. We agree with Weick that many of the liabilities of laboratory methods can be viewed as conceptual assets:

Research participants are apprehensive about being evaluated, but so are ambitious employees; laboratory tasks require limited skills and the "rest" of what the person brings to the laboratory is ignored, but the same holds true when you have a division of labor and partial inclusion; relationships between the experimenter and the respondent involve asymmetrical power, but the same holds true for superiors and subordinates; participants seldom know why they are doing the things they do in laboratories, but employees often operate under similar conditions of ignorance and faith; participants in laboratory groups seldom know one another intimately, but the same is true in organizations where personnel transfers are common, where temporary problem solving units are the rule, and where impression management is abundant; people participate in experiments for a variety of reasons, but the decision to participate in an organization is similarly overdetermined; and finally, people are suspicious of what happens to them in laboratories, but so are employees suspicious as they become alerted to the reality of hidden agendas and internal politics.

(Weick, Note 2)

The favorable bias we have toward simulations is obvious from our two-year investment in the development of Looking Glass. We do not, however, view this or any other simulation as a substitute for carefully-designed field research. Rather, Looking Glass should be viewed as a complementary method, particularly useful for identifying and generating data about relatively unexplored areas of leadership behavior. The potential of such simulations has been demonstrated by studies of information processing (Schroder, Driver, & Streufert, 1967), international relations (Guetzkow, 1971), police communications and stress (Drabek, 1969), and military decision making (Olmstead, Cleary, Lackey, & Salter, 1973).

Built-In Research Issues

Looking Glass was designed to generate data on leadership processes in an organizational context. It was designed so that the impacts of environmental effects, hierarchical level, problem variety, and structural differences could be studied either within or across runs.

Environment Effects

While many leadership models involve situational contingencies, "situation" is usually defined by a handful of variables embedded within or immediately adjacent to the leader's work group (e.g., leader position power, group task structure, etc.). Other work, however, has shown that the nature of an organization's external environment (e.g., its stability or complexity) affects a variety of structural factors and internal processes (see Steers, 1977, for a review of such studies). It has been suggested (Lorsch & Morse, 1974) that the nature of the environment determines the style of leadership that will be most effective. Unfortunately, little evidence is available on this issue, and even less is known about which or how environmental factors might directly influence a leader's behavior. It's not even clear that the objective characteristics of the environment are as important as leader perceptions of the outside world.

To examine relationships between environmental uncertainty and leader behavior, each of Looking Glass's three divisions was designed to face a different environment. Conceptually, the environment of the Advanced Products Division is the most uncertain, while that of Commercial Glass is most certain. Industrial Glass falls between the two.

The major elements used to create environmental differences were discussed in some detail in Section I of this manual (see pp. 13-16). They included the nature and diversity of customers and competitors, the sophistication and likelihood of change in technologies, the predictability of future markets, financial stability, etc. A few of these elements are summarized in Figure II-1.

Figure II-1

Examples of Environmental Differences Among Divisions

	<u>Advanced Products</u>	<u>Industrial Glass</u>	<u>Commercial Glass</u>
<u>Customers</u>	high percentage military, many independents and smaller customers	customers respond to consumer taste, military contracts	a few large customers of long standing
<u>Technology</u>	fast-charging, highly sophisticated	schizophrenic: part stable, part exotic	relatively stable, straightforward
<u>Markets</u>	feast and famine, largely unpredictable	both stable and volatile	primarily slow, steady growth--quite predictable
<u>Competition</u>	many competitors, often vicious and fast-charging	mixed	few competitors, relationships well established

example, APD's turbulent environment produces more decentralized management and more participatory decision making, even when the back-home organization is quite bureaucratic. This contrasts sharply with CGD (the stable division) which tends to become more centralized and less participatory. The behavioral effects of hierarchical level seem to depend on the nature of the environment confronted.

The fuzziness of authority in Looking Glass permits the participants to define for themselves the limits of personal action. From a research point of view, this process can be observed as it plays out over the course of the simulation. Thus, hypotheses about the relationships among hierarchy, environment, technology, and power distributions can be generated. The impact of formal authority can be manipulated rather easily by modifying job descriptions to create more or less authority at differing levels of the hierarchy. Our hypothesis is that the back-home stance toward authority and the nature of the problems faced in a particular Looking Glass position are far more important determiners of actual authority than are written regulations.

Structural Effects

Looking Glass was designed to simulate a typical hierarchical organization. Within that framework, the "fit" between environment and structure can be examined.

The current structure of Looking Glass is divisional, with each division containing a cluster of products produced by similar technologies and facing similar environmental uncertainties. Each division contains the primary functions (sales/marketing, manufacturing, product development) to operate independently of the others. Even though the technologies and environments of the divisions differ dramatically, each division is designed identically. Positions, hierarchical levels, and responsibilities--in short, the basic organization structure--are constant across divisions. This creates a classic case of misfit between structure and environment. Numerous researchers (unfortunately using different operational definitions of structure and environment) have found a general trend for the structure of effective organizations to "fit" the environment in which they function (e.g., Lawrence & Lorsch, 1967). Bureaucratic structures, for example, should be more effective in stable environments. Looking Glass permits researchers to look closely at the processes involved as the three divisions confront the problems generated from their environments.

Unless structural changes are made by participants, the best fitting division should consistently out-perform the others. Since environments vary on the certainty/uncertainty dimension, division effectiveness without structural changes should be linear across divisions (CGD most effective, APD least).

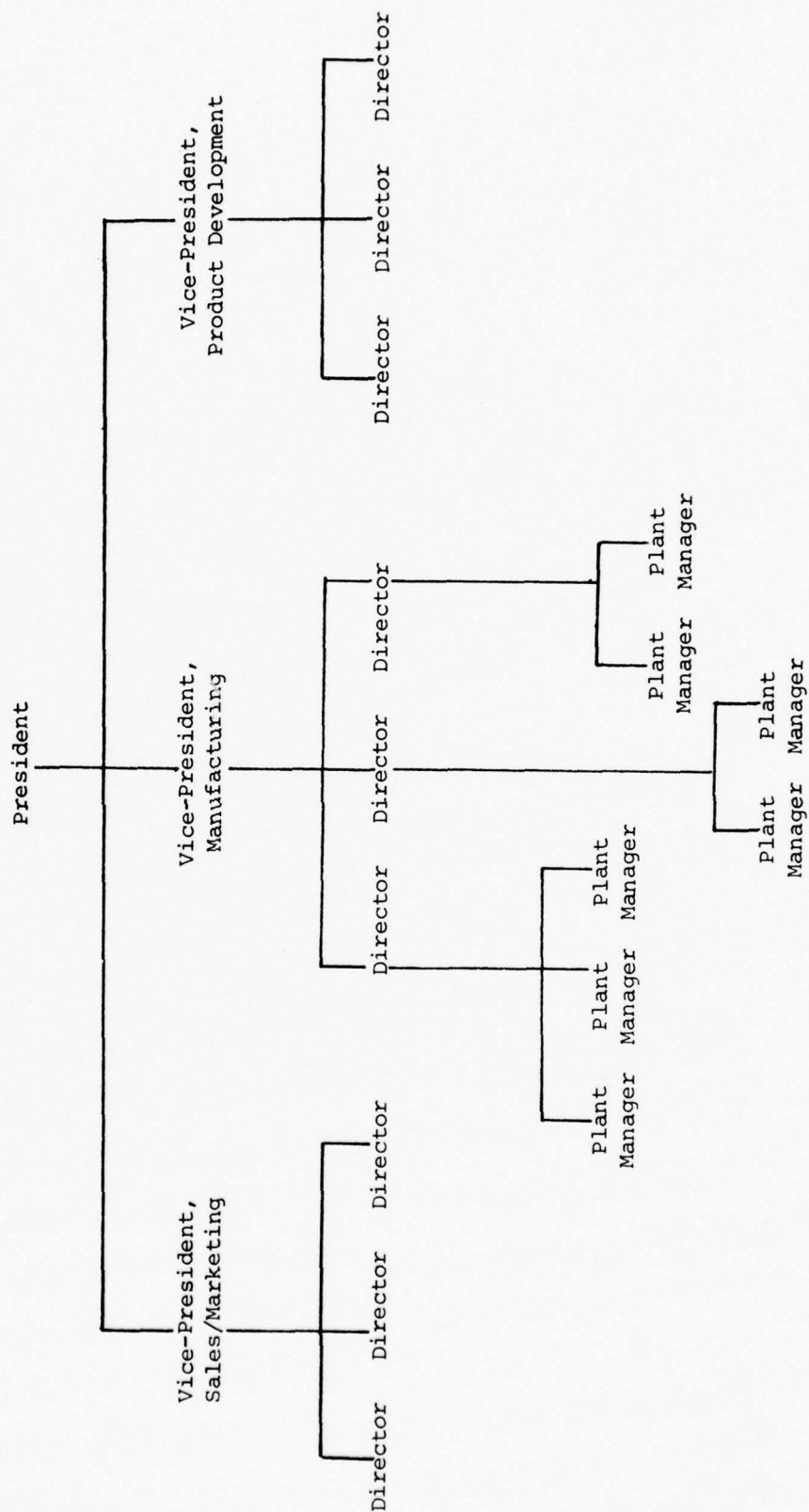
Further examination of fit questions and evolution toward congruence can be examined by changing the structure of Looking Glass across runs. We designed the simulation so that its basic materials could be transformed easily to a functional (as opposed to the current divisional) structure. Using the same problems, products, technologies, etc., Looking Glass can be designed in a very different way. One such functional design is presented in Figure II-2. Existing memos would have to be redirected against the new structure, but the effort could produce significant data across runs that alternate functional and divisional structures. Other structures, such as matrix designs, could also be introduced.

Few researchers use the same operational definitions to describe organizational environments (see, for example, Duncan, 1972; Lawrence & Lorsch, 1967; Pugh, Hickson, Hinings, & Turner, 1969; Terreberry, 1968; Thompson, 1967). Given this ambiguity, we chose to design the environmental variation of Looking Glass on the basis of field interviews, expert descriptions of the glass industry, and business publications. We feel, therefore, that the environments reflect reality, even if they do not reflect precisely a particular theoretical framework. A major difference between Looking Glass and theoretical formulations is that the environment of Looking Glass cannot be characterized as a single entity. There are three environments, a different one for each division. Our experience is that middle- to large-sized organizations do in fact face multiple environments, and we have clustered product lines to create differing levels of environmental uncertainty in each of the three divisions.

We did not find, even in organizations with relatively stable environments, anything we could term as a "simple" environment. Middle- to large-sized organizations face complex environmental forces, so we had no choice but to make all three divisions complex.

As an anchor to existing research, the three division environments can be arrayed along a continuum ranging from uncertain/complex to certain/complex (see also p. 43).

Figure II-2
One Possible Functional Design for Looking Glass



These manipulations represent to us a tremendous advantage of the simulation. Crucial experiments around the fit hypothesis can be conducted precisely because the environmental elements are controlled while structural elements are manipulated. (In real organizations such control and manipulation is impossible.) Further, the actual behavioral effects of different structures and fits can be observed. This is true both within and across runs.

Looking Glass was designed with a divisional structure to permit a within-runs examination of fit effects. During the designing we noticed that the concept "organizational environment" was fuzzy. It also changed in meaning if we structured our simulation differently.

It was fuzzy in the sense that existing research on environments (particularly the operational measures used) were both contradictory and difficult to apply. We accepted the abstract notion that environments differed (whether on stability, complexity, hostility, predictability, etc.), but when it came to actually designing "real" environments we found specifics sorely lacking. We now wonder how many other organizational concepts, so compelling on the surface, also suffer from this vagueness.

The concept changed in meaning in the sense that the "environment" of our company became three different entities when we set up a three-division structure. As we toyed with functional designs, the concept of a "single" environment made more sense but simultaneously camouflaged the important differences among elements within the environment. As a result of our experience, we now hope that organizational theorists someday will confront more directly the complex realities of organization environments. Environments are not singular, abstract entities--they are composed of many complex and contradictory elements. To make matters worse, our careful examination of organizational charts revealed that the structure of real organizations is never pure. We couldn't find any pure functional, divisional, or matrix organizations. Further, the ways organizations evolved their structures were as much political and built around individuals as they were "rational." Finally, organizations were constantly changing their structures--so much so that organizational charts were out of date before they were printed.

The implications of these informal observations for theories of structure/environment fit certainly merit further research. If they are accurate, they mean that we have only scratched the surface in understanding what the

macro side of organizations is all about. We hope that Looking Glass will be one of many tools useful in this pursuit.

Position Effects

Because Looking Glass contains a variety of management functions that are identical across divisions, it can be useful for examining the impact of position on leader behavior. There are one President, three Vice-Presidents, three Directors of Sales/Marketing, three Directors of Manufacturing, three Directors of Product Development, and seven Plant Managers. The fact that environments and technologies differ across divisions permits tests of the main effect of position on power and influence development. Preliminary evidence across runs indicates, for example, that the Director of Product Development in APD (the unstable division) is generally seen by his or her peers as more powerful than the same Director in CGD (the stable division). This is consonant with strategic contingencies predictions (Hickson, Hinings, Lee, Schneck, & Pennings, 1971) which suggest that the problems handled, rather than position per se or personality, determines who has power.

Interestingly, the positions Director of Product Development and Plant Manager seem most likely to show power differences across divisions (see pp. 77-84). Overall, position, regardless of the incumbent or the division, seems to dictate who gets power.

The Massive Interaction

A perennial nagging question in the social sciences is whether the person or the situation is the primary causal agent in behavior. For behavior in organizations, Looking Glass may eventually shed some light on that issue. Each run of the simulation involves 20 individuals, 6 substantively different positions, 4 different hierarchical levels, and 3 different environments. By systematically collecting data on individual characteristics (such as cognitive complexity or leadership style) and on various performance measures, it will be possible eventually to look at percentages of performance variance contributed by individuals and by aspects of their situations. In spite of the limitations on simulations and the complexity of these data, Looking Glass is a unique vehicle for exploring this critical issue.

Organizational Phenomena Observable in Looking Glass

In many respects, studying Looking Glass presents the same challenges as studying any real organization. Looking Glass is simpler, there are fewer members, and many more variables are controlled than is the case in real organizations--but it is still complex. It is a purist's nightmare in that virtually every variable--just as in a real organization--is confounded. Worse yet, the artifacts of a simulation cannot be identified precisely, much less separated from the "real" effects. These confounds (most of which are discussed in this manual) are both a weakness and an advantage. The weakness is that definitive statements regarding the impact of any one variable can never be made on the basis of data generated by Looking Glass. This is why we have emphasized its role as stimulus for asking questions, generating hypotheses, and collecting data that can be verified using other methods. The advantage, however, is that moderate control permits the observation of leadership as it plays out in a complex and realistic context. This means that most of the processes of interest to organizational researchers can be observed as they occur. Because the simulation lasts for six hours, observations of process are not simple snapshots--they unfold over time. Several such processes were of interest to us as we designed Looking Glass, and more possibilities are unearthed each time we run the simulation. There are so many, in fact, that only a few will be presented here, and they only briefly.

Coupling

Weick (1976) and others have discussed the notion that open systems theory needs refinement. They argue that the interrelatedness of open system components (coupling) is not a given, but is itself a variable. Organizations can vary from tightly coupled to loosely coupled. Because of the environmental and structural control in Looking Glass, it is possible to observe the process of coupling. The divisions, for example, may remain autonomous or become highly interdependent. The same is true of departments within divisions. By classifying the outcomes of each run, it should be possible to explore (1) what factors influence tight vs. loose coupling and (2) the impact of tight vs. loose coupling on performance.

Cognitive Mapping

How do managers, embedded in a complex environment and doing a job that is fast-paced and fragmented, figure out what the relevant cause and effect relationships are? Research on cognitive complexity and human information processing, for example, suggests that individuals vary considerably in their ability to discriminate among and integrate pieces of information. This no doubt is one element contributing to a manager's operational map of cause and effect relationships. Because the information inputs to Looking Glass are controlled, it should be possible to capture the cognitive maps individuals develop, how they vary, and the impact of the variation.

Information Processing and Decision Making

Whether or not implicit cognitive maps are made explicit, Looking Glass is a fertile vehicle for exploring decision making under uncertainty. As was explained in the first part of this manual, inputs to the participants were designed to cover an array of different types of issues (from nuisances to tactical and strategic problems) and to vary in their complexity, importance, and urgency. While a great deal of research has productively tackled individual decision making on relatively discrete problems (e.g., Slovic, 1972), Looking Glass confronts managers with a variety of problem types and presents them in the context of management work. That is, it permits research on how decisions get made in the chaotic, often confusing, and certainly complex world of the manager in an organization. On an individual and group level, it is possible to observe (1) how problems get recognized or ignored, (2) the process of problem definition, (3) the search for and integration of information, (4) how solutions are generated and examined, (5) what action is taken or not taken, and (6) in some cases, the impact of the decision. More important, perhaps, it is also possible to watch solutions search for problems (Cohen & March, 1974), to examine the juggling of multiple problems and priorities, and to observe the effects of people, politics, interruptions, and other factors on the process of decision making.

Power and Influence

Looking Glass, like most organizations, quickly develops power and influence patterns. Many issues involving these

concepts remain unresolved (see McCall, in press), and the simulation provides a relatively unique setting to examine some of them. Participants can, with some consensus, identify who had the most influence in Looking Glass. Preliminary data indicate that, in general, power is connected with level in the hierarchy. There are several exceptions to this, and among peers there is considerable variation in power rankings. Hopefully, Looking Glass will eventually shed some new light on how power gets where it ends up, the impacts it has, and which of the many views of the concept most parsimoniously explains the process.

Organizational Climate

A major theme in organizational research in recent years has been the issue of climate (e.g., see Payne & Pugh, 1976)--that elusive "something" that reflects a tone, a meaning unique to an organization. Data from surveys indicate that climate is a correlate of a number of outcome variables, but little is known about how a climate forms. In the preliminary runs of Looking Glass, we have collected data on a subset of items from the Survey of Organizations (Taylor & Bowers, 1972). These data indicate to us that the simulated organization does in fact form a climate by the end of a run, that participants can describe that climate on standard questionnaires, and that there is sufficient variation across runs and within divisions to permit meaningful analysis. We feel that Looking Glass has potential for shedding light on how technological and environmental factors, various leadership actions, organizational performance, and interdependence affect climate formation.

Managers' Use of Structure

It was clear from the interviews we conducted to design Looking Glass that managers constantly make structural changes in their organizations. These can be as simple as altering a reporting line or as complex as a major departmental reorganization. In spite of the prevalence of structural changes, they have seldom received any attention in the leadership research.

Looking Glass presents managers with numerous opportunities to alter the structure of the organization. These include issues involving the role of product development, potential plant mergers, and redesigning structure through

acquisition or divestiture. By watching how managers react to such problems and initiate their own structural interventions, it may be possible to understand the place of organizational design in leadership behavior.

These six areas--coupling, mapping, decision making, power, climate, and use of structure--by no means exhaust specific areas of interest to us or potential research questions within the simulation. Many other processes--such as how feedback systems and communication networks form--could be elaborated.

Measurement Strategies

Clearly, the how and what of measurement should be determined by the theories or hypotheses of interest. The wide range of questions that Looking Glass can address precludes a detailed prescription here. There are, however, many strategies for measuring behavior and outcomes that can be used in Looking Glass. We explored 11 strategies and found them viable.

Observers

We have used up to nine observers in a given run of the simulation. Depending on the primary research questions involved, observers can be used to collect continuous, structured observations or time-sampled data, or can be used anthropologically.

If the behavior to be observed is specific and defined a priori, structured observation is clearly appropriate. We recommend two to three observers assigned to each division (observers should be familiar with both the division materials and the dimensions they are to observe). They may be assigned to specific roles or to sample all of the roles on a scheduled basis. Another variation is to assign one observer to attend all meetings while other observers time sample behavior.

Because the behavior of participants is not controlled, observers cannot predict what issues will be tackled, when (if at all) meetings will be held, etc. Inevitably, a lot of useful data will be lost. If the major research aim is to follow specific problems through the simulation, time sampling is risky. It might be better to assign observers to the role where the problem first appears, with the mandate to follow the problem wherever it goes.

Refining concepts is often a tough proposition in organizational research, and Looking Glass is a good forum for initiating the process. If moving from common sense or intuition to specific definitions is the research goal, we recommend using anthropologists as observers. Take, for example, the objective of refining the concept "politics." An observer might be told to walk around and write down every incident that might be construed as political (using no specific definition). After a run of the simulation,

these notes are reviewed by the research team and some general parameters are established. During the next run, the observer again looks for political behavior, but this time certain events have been eliminated, others targeted. The results are reviewed again, further honing is done, etc. The process is repeated until a viable and observable concept is produced.

Self-Report

Standard self-report measures are quite appropriate for use with Looking Glass. We have had no trouble collecting questionnaire or interview data following simulation runs. When using standard questionnaires, check that they only cover areas included in the simulation. Not all participants have "live" subordinates. For example, in one run only seven participants could answer questions about subordinate behavior.

We strongly recommend use of stimulated recall techniques. Looking Glass is complex and participants are involved in many things over the course of six hours. The accuracy of their self-reports will be enhanced if the appropriate stimulus (for example, a specific memo or a videotape clip) is used in conjunction with a specific question. Stimulated recall is, in our opinion, far superior to interrupting participants during the run so they can record their feelings or reactions. The strength of Looking Glass is its generation of a complex, ongoing management environment. Staff interruptions create an artificial flavor that can destroy the experience.

Peer Ratings

Participants are usually able to describe or rate each other's behavior on a variety of dimensions (particularly on interpersonal dimensions). These assessments can be quite accurate (e.g., Hollander, 1957) and efficiently collected. By studying the problems in a division and examining the organization chart, it is possible to predict with some accuracy who will interact most with whom. Since the simulation does not force interaction, however, researchers should be careful not to require ratings by peers who have not observed the target person's behavior.

Assessment Center Methods

Looking Glass is not intended for use as an assessment center to make selection or promotion decisions. For research purposes, however, assessment center measurement strategies can be useful. For example, each participant works through an in-basket. Written responses could be scored in a standardized way (there will be some psychometric problems since the content of each in-basket is different).

Another example would be use of observers to "case conference" individual or divisional performance. Especially since specific problems are hard to follow as they flow through a division, pooling observations could be a useful device for evaluating decision processes.

For additional ideas, the reader is referred to overview articles on assessment center methods by MacKinnon (Note 3) and Howard (1974).

Norms

We are developing norms for certain performance dimensions of the simulation. These include numbers and types of decisions made, some outcome measures, and some process variables. Current plans call for completion of initial norming by August, 1979. Users are advised to contact us for current information.

In addition, we are investigating building a computer model for the impact of financial decisions made in Looking Glass. Again, users should contact us for further information.

Unobtrusive Measures

Participants leave traces of their activities that represent unobtrusive measures. These include memos they send, phone calls they make, and the information they request from non-live roles or outsiders. We typically collect all materials after each run, later classifying the written documents in a variety of ways. Further, all calls go through a switchboard and are logged to create a partial but unobtrusive record of interaction patterns.

We have also learned that recording information requests is a valuable data source. Participants can place calls to outsiders or to insiders who are not "live." Staff members deal with these requests (we are developing a manual of standard responses), and are in a position to note the topic. These notes, in turn, are some indication of the problems receiving a lot of attention during the simulation.

Looking Glass also contains some built-in measures. For example, several participants are due performance appraisals, a number of awards are distributed, and some vacancies are filled. How these are handled yields information about informal evaluation processes within the company.

Pretest Measures

A variety of individual differences measures can be collected prior to the simulation, subject only to the patience of the participants. Needless to say, such measures should correspond to the specific research questions being asked. For example, if the research is to explore relationships between cognitive style and managerial behavior, one or several cognitive measures might be administered beforehand.

We recommend, at a minimum, collecting basic background data such as current position, level, and time with the company so that sample characteristics can be described (we are currently developing such a form). We urge users not to deluge participants with an extensive battery of tests prior to the simulation because they may create apprehension, thus altering participant behavior, and because they can create a decidedly non-managerial set for the participants. Collecting pretest data will have less impact if done several weeks in advance of the simulation run.

Other outside measures may be readily available and not require participant time. Performance appraisals, promotion histories, and the like may be useful. Other data might be gathered through peer or subordinate surveys (see Morrison, McCall, & DeVries, Note 4, for a review of such surveys).

The Debrief as Data Generator

Quite by accident, we discovered that debriefing participants as divisional groups generates fascinating data. In

exchange for their participation in Looking Glass, we provided a one-day debriefing for the managers. Part of this, the divisional debrief, gathers all members of a division to discuss the decisions they made during the simulation. Each manager describes the major problems he or she dealt with. In this group setting it is possible to record participant perceptions and divisional priorities, as well as to reconstruct the decision process from recognition through disposition. Some groups focus entirely on operational problems, while others list interpersonal or process issues. Some groups are very tactical, others strategic. With sufficient structure, "group interview" techniques can generate a lot of data on how things were done.

Mechanical Records

Well-funded users may want to use video- or audiotaping as a data collection tool. While mechanical recording yields a complete record, we feel that the amount of behavior generated by 20 people over a 6-hour period is too mind-boggling to be useful analytically. We currently record all phone conversations. We are also considering recording meetings (with discretion in the hands of the observer). But we do not intend to wire participants or otherwise continuously record--the clerical work required to use such data would far outweigh its usefulness.

We also tried to use portable video cameras to record only significant events. We found first that we never knew when significant events might occur (and, by Murphy's laws, the cameraman was never there when they did), and second, that the appearance of a camera significantly affected the participants. Only certain scheduled meetings, such as the Plant Manager's briefings and the President's Address, readily lend themselves to videotaping.

We think that mechanical devices can be used on a limited basis to collect useful data, but feel their primary role should be training instead of research.

Expert Judgment

One strategy for measuring individual, divisional, and/or organizational performance is to use expert judgment. Primary simulation problems have been identified, and we are creating a panel of executives to rate alternative solutions

to those problems. Participant performance could then be assessed against these outside judgments.

A Playground for Developing and Testing Measurement Systems

Looking Glass is a simplified organization, and most variables of interest to organizational researchers are either built-in or occur naturally. It is a near perfect setting for developing and comparing measurement strategies, and it doesn't use up field settings for initial development of instrumentation.

Interventions

To this point we have discussed built-in manipulations, research features of the design, some research areas particularly suited for study, and some measurement strategies. Quasi-experimental research designs can be introduced through a variety of interventions, six of which will be outlined here: sample manipulations, introduction of crises, creating an outside board of directors, leadership succession, pre-setting managerial strategy, and training intervention.

Sample Manipulations

By systematically varying across runs the samples used, an almost limitless number of comparisons can be made. For instance, what do inexperienced managers do that experienced managers don't? To explore that question, the researcher might run Looking Glass several times, alternating groups of experienced and inexperienced managers.

What differentiates intact work teams from stranger groups? Which are more efficient, creative, effective? Why? What happens when a new management team is formed? Our pretest runs consisted of both intact work teams and stranger groups, as well as some in between. Observation of these different groups suggested that intact work groups may "get down to business" faster and virtually ignore interpersonal issues. Stranger groups may spend more time floundering in priorities, be more democratic (at least at first), and be more focused on interpersonal relationships.

Other sample manipulations could include high-potential vs. average managers (what do they do differently, other than succeed?), role reversals, varying proportions of males and females, etc. What effect does a manager's background have? Why not use samples or subsamples from different companies, divisions, functions, levels, or whatever?

Sample manipulations in the simulation can provide researchers with a close look at the behavioral differences between groups. The initial stimuli are identical, a condition almost impossible to replicate in the field.

Crises

No major crises (except those generated by the participants themselves) are designed into Looking Glass. But a researcher may be interested in the effects of a crisis on organizational processes--a condition hard to create experimentally in an ongoing organization. Looking Glass can be subjected to such an intervention and is long enough to establish a pre-intervention base rate. In one pretest run, we experimented with crisis by creating a phone call to the President from a newspaper reporter about a possible materials shortage in one plant (there was such a threat in one Plant Manager's in-basket, but it had been ignored). The organization immediately mobilized around that "problem," even though it was objectively a minor issue. Miscellaneous information was forced together by various managers to create a coherent picture, and many myths were founded on the spot. The intriguing organizational reaction to the intervention suggests that Looking Glass is a fertile resource for generating hypotheses about the formation and resolution of crises, as well as about the impact of crises on managerial behavior.

The Board of Directors

What effects does a board of directors have on the top management of a corporation? Board decisions could be programmed into Looking Glass, or better yet, a "real" board created. Very few research efforts have examined the behavioral impact of directors, and Looking Glass might generate some viable hypotheses as a starting point. Different board orientations (e.g., financial, ethical, social) or stances (e.g., profits, sales, or growth) or composition (e.g., familiar with the business vs. unfamiliar) may have dramatic effects on leadership in the organization.

Leadership Succession

A search of the research literature on leadership succession revealed that relatively few studies on the topic exist. In fact, little hard data on the magnitude of succession effects could be found. Yet, our work with major corporations indicates that managers change jobs frequently. One large corporation's records show, for example, that in one year's time 25 percent of the managerial jobs turn over. In another organization, it was 40 percent. Managers are

promoted, transferred, or demoted; they resign, request new assignments, retire, or die. And even, on occasion, they are fired.

What impact does this movement have on organizations and on the managers? Is succession worth more research attention than it has received? While Looking Glass does not last long enough to simulate the longitudinal effects of succession, it can be used to explore short-term implications. Specifically, Looking Glass can be manipulated to create (1) changes among subordinates, (2) the appearance of a new boss, (3) turnover in critical positions, (4) reactions to vacancies in office, and (5) reactions to threats of reorganization or layoffs.

The relative autonomy of the three divisions in Looking Glass means that up to three Plant Managers could turn over without stretching credibility. By replacing these Plant Managers sometime during a simulation run, the researcher could observe such things as how the Director of Manufacturing introduces the new subordinate to the job, the staff, the politics, etc. Is the change seen as an opportunity to change the plant, to inculcate new values, or as an additional strain for an already busy executive?

The impact of leadership changes in critical positions can also be examined by creating turnover during the simulation. The roles of President, Vice-President, and Director of Manufacturing are prime candidates for such a manipulation. For example, turnover could be induced by changing an incumbent at each of the three levels, thereby generating data on which has the greatest impact on the organization. Another manipulation might involve filling critical vacancies by promoting from within (either from the same division or from another division) vs. bringing in an outsider.

Succession in critical roles also suggests testing the impact of value infusion. What happens, for example, when a Director of Manufacturing succeeds a sales-oriented Vice-President? To study this, the incumbent Vice-President might be selected on the basis of his or her current job--in this case, the Vice-President would be a person who is a sales manager in the back-home environment. During the simulation, one of Looking Glass's manufacturing directors would be promoted to the Vice-President slot. The question: Will the orientation of the division change in line with the successor's predisposition? If so, how is the change implemented?

A fourth area of inquiry would be the effects of vacancies. Rather than fill a critical role immediately, the researcher might leave it open to observe how potential candidates jockey for position, how work gets absorbed by remaining managers, or how the rest of the organization helps out or exploits the situation. As an example of this latter issue, the researcher might focus on the problem of capital investment. Each division has needs, but there are limited resources. If a division Vice-President leaves the company during the simulation, what happens to the division he or she represents vis-a-vis resource allocation?

Another aspect of succession could be explored not by actually creating a vacancy, but by introducing rumors or plans for reorganization, impending vacancies, or layoffs. Such manipulations would allow observers to see how behavior is affected.

Some issues related to leadership succession have been designed into Looking Glass and might provide useful insights without an additional manipulation. Within the Industrial Glass Division, the Plant Manager position at the Glass Piping Plant is open and responsibility for the plant is temporarily assigned to the Director of Manufacturing. Within Advanced Products, a new plant is opening in six months, thereby creating a new executive position. The corporation may buy a new bottling plant, again creating new executive positions.

It is also possible to create a succession crisis in Looking Glass. What would happen if several key roles were vacated unexpectedly and simultaneously (as would be the case if several executives resigned in protest or were fired, or if they were lost in a plane crash)? While such situations are rare, there can be little doubt that they are important. Insight into how organization structures, procedures, and practices facilitate or inhibit transition could be critically important for making contingency plans where risks of leadership loss are present.

Pre-Setting Managerial Strategy

It is risky to try out various managerial strategies in real organizations, particularly if those strategies are creative (and the consequences unknown) or if failure would be costly. Many strategic decisions can be modeled with computers, thereby producing estimates of results. But little is known about the behavioral impact of strategic

choice, and Looking Glass might represent a vehicle for exploring those questions. One way to do this would be to "indoctrinate" the President and the Vice-Presidents prior to the simulation run. Across runs, economic strategies might be varied such that one group sought to maximize profit, another sales, another growth, etc. Each simulation would generate data on the effects of the chosen strategy on the behavior of the other managers, political processes, decision making, problem finding, politicking, etc. Other data might be collected on how organization climate is affected by strategic choice, which departments or divisions gain the most influence, or how operations at lower levels are impacted.

Since most organization research is aimed at finding ways to improve organizational effectiveness, there must be some understanding of what leads to ineffectiveness. One intriguing use of Looking Glass would be to find out what leads to organizational disasters. To do this, the researcher might give the participants the goal of sinking the company--of managing in such a way as to produce the worst possible organizational performance. One hypothesis might be that it is much easier to destroy a stable division (CGD) than it is to destroy a division facing a turbulent environment (APD). If the environment is unpredictable, it is probably as hard to really mess things up as it is to do extremely well. There is a great deal of randomness involved, thereby obscuring cause and effect relationships surrounding managerial action. When the environment is stable, managers should have a pretty good idea of what actions will cause adverse consequences.

Other manipulations of managerial strategy are clearly possible, depending on one's research interests. Enchantment with political behavior might lead to asking the participants to behave as politically as possible. Interest in participative leadership might call for requiring all participants to input to all decisions (or subjecting all decisions to a vote).

Other manipulations might involve setting different managerial strategies in the different divisions. A complex example would be looking at environment/organization fit in several different ways by contrasting structure with leadership style. As it now stands, Looking Glass's three divisions face different environments but are structured in the same way. One might begin by having all managers in APD use participatory styles while all in CGD are autocratic. These could then be reversed, testing the hypothesis that democratic style is more effective in turbulent environments,

while autocratic styles are more effective in stable environments (with structures held constant). Then the experimenter might want to vary the structures in the divisions, putting a more organic design in APD and keeping CGD bureaucratic. These could then be reversed to test a structural as opposed to a leadership hypothesis.

Training Evaluation

Looking Glass has potential for helping evaluate management training programs and for contrasting training techniques. In the former case, Looking Glass could be used in a post-test only design, comparing the behavior and performance of trained vs. untrained managers (or beginning vs. finished MBA students). For the experimental group, use of the simulation would (1) demonstrate if the participants could implement the trained principles and (2) allow them (through comparison with simulation norms or the untrained group's performance) to see the effects of behaving in the trained way. A tough problem in training has always been transfer of training from the classroom to the job. Looking Glass represents an intermediate stop on that road. If training effects will be washed out by organizational factors, this may show up during the simulation run. More important, trainers might get some insight into the organizational forces making transfer difficult.

Training research has also been faulted because various programs for training the same skills are seldom compared empirically. Looking Glass might be a useful vehicle in this regard. One might ask, for example, if behavior modeling is superior to programmed learning for teaching a certain subject. Managers taught with each of the techniques might participate in different runs of the simulation, permitting a comparison of both process and outcome results.

A more challenging experiment might be to contrast interpersonal skills training with reinforcement or goal-setting approaches to the same problem. One group of trained managers might go through the simulation, followed by an untrained group. For the untrained group, however, the researcher might modify Looking Glass to reflect the reinforcement schedule or goal manipulation. Performance differences might shed some light on which approach has the most impact and why.

Looking Glass as a Research Playground

At one time or another, all researchers ask themselves, "How much do I really know?" Attempts to answer that question about theories and models in organizational behavior usually take the form of field interventions--attempts to introduce change in ongoing organizations. Unfortunately, field interventions seldom produce unambiguous results. By the time practical constraints have taken their toll in research design alterations, and after organizational events (such as transfers, strikes, and reorganization) have had their effects, the researcher emerges with at best a qualified answer to the question. One is hardly ever sure that the manipulation, and not intervening events or design flaws, caused whatever outcomes could be measured.

However crudely field interventions may test our theories, most of the models generated in organizational behavior are never tested in field experiments. We would like to suggest that a device like Looking Glass can be used as a partial answer to "What do I really know?" It provides more control than the typical field setting but preserves more organizational reality than either the laboratory or the computer.

The challenge would be for the researcher to use his or her model of reality to make something happen in the simulation. If I believe I know how to design an organization to cope with turbulent environments, I should be able to redesign the Advanced Products Division and see it cope better. If I believe I understand how to make leaders more effective, I should be able to do my thing with the managers of Looking Glass and watch them do better. If I think I know how coupling works in organizations, I should be able to tinker with Looking Glass to create tighter or looser coupling. If I think I know what causes certain people to get power in organizations, I should be able to design Looking Glass so that specific people end up with the power. The list could go on, but the point is simply that the simulation permits observation of the effects of reasonably well-controlled interventions. If a theory does not work as expected, the researcher has at least seen the process by which it went down the tubes. Because Looking Glass faces multiple environments, the researcher may learn something about the conditions under which the model can work. It is also possible to try again after modifying the original theory; the situation at Looking Glass always starts off the same way.

Another advantage to the Looking Glass playground is that the simulated organization doesn't care if the theory

makes any sense. We suspect that many creative approaches to understanding organizations will never be field-tested because no manager in his or her right mind would take the chance with a real organization.

We don't intend here to overrate the power of the simulation. There are many notions that could not be tested with Looking Glass, and positive results from a simulation are not necessarily generalizeable. Nonetheless, the usefulness of flight simulators, wind tunnels, the NASA lunar program, and a multitude of other physical simulations indicates that organizational researchers might have something to gain by taking their theories into a simulated organization.

Some Preliminary Data

At this writing, Looking Glass has been run only five times. These runs were all part of the developmental effort, and each resulted in modifications to simulation administration and/or content. In spite of the experimental nature of these runs, the last three were sufficiently similar to permit data collection on certain simulation and organizational issues. In this section we will report some of these data, realizing full-well that they are not conclusive nor scientific. We offer no justification except that they are all we have right now, and we think they are interesting.

The data reported here are organized around two issues. The first deals with the validity of the simulation itself: Is there any evidence that what managers do in Looking Glass is similar to what managers do in real organizations? The second deals with organizational issues: How does power operate in Looking Glass? What kinds of climate does the simulation produce? How do decisions get made?

These data were drawn from the last three trial runs of the simulation which took place at a bank, a manufacturing firm, and a state government. Each run consisted of 20 managers. For the bank and the state government, the managers came from middle levels and, for the most part, did not work together back home. Those that did work together were placed in different divisions of Looking Glass so that no one reported to his or her real boss. The manufacturing sample did contain an intact work team. The President and the three Vice-Presidents had the same reporting relationship back on the job. Further, the manufacturing sample was drawn from the top and upper-middle management levels.

Selection of participants and assignment to roles in Looking Glass was non-random at all three sites. In all cases, participation was voluntary. The program was initiated by the human resources function in each organization and was billed as an experimental training experience (a day of training was designed to accompany the simulation). The experimental nature of the program was emphasized most strongly in the manufacturing firm, where the participants were asked to evaluate the experience for potential inclusion in the training sequence at the company.

It should be noted that only minor changes were made in the simulation after these three runs. These involved some dickering with specific memos and some minor administrative

alterations. In short, Looking Glass itself was run in essentially the same manner each time. The major alterations had been completed after the first and second trial runs, leaving the data relatively clean for the last three.

Some Validity Issues

A simulation is a model of reality. Looking Glass is not, however, a simulation of any explicit theory of managerial work. Its inductive roots (particularly as they reflect interviews with managers about typical days) mean that this simulation contains an implicit model of managers' work. The most appropriate evidence to gauge the validity of the simulation, then, would be inductive and descriptive data on what managers do.

While the pretest runs of Looking Glass were not used for systematic data collection, we can draw on several sources of information to look at some validity issues. First, we will look at the inputs managers receive in Looking Glass, specifically as they appear in the 20 in-baskets that start the simulation. Second, we will examine the outputs produced by the managers during and after the simulation. Some evidence of validity can be assumed if the inputs and outputs of Looking Glass coincide with the inputs and outputs of real managerial jobs.

Inputs

Does the information in the average Looking Glass in-basket at all approximate what a manager might run into in a real organization? We infer that the answer is "yes" on the basis of three data sources: (1) the way the materials were developed, (2) the reactions of manager/participants, and (3) a comparison of our inputs with Mintzberg's (1973) descriptive data.

The development of the Looking Glass in-baskets was described in great detail earlier in this manual. The issues, problems, and materials were drawn from (1) interviews with practicing managers in several different companies, including presidential to plant manager levels; (2) plant tours, visits, and observations; (3) examination of the business literature on and from the glass industry and on industry in general; and (4) discussions with consultants from profit-making organizations. Various parts of the simulation were verified with specialists and/or practicing or retired businessmen. These developmental procedures, coupled with our staff's efforts to code and classify events to assure their representation in the final product, mean that the contents of Looking Glass belong to

managers more than to us as researchers. While this does not mean that the domain of managerial issues and activities is replicated (or even adequately sampled), it does mean that Looking Glass has high face validity.

A second chunk of informal validity evidence comes from outside observers and from the participants themselves. As was discussed earlier in the manual, the pretest runs of Looking Glass were scrutinized by human resources and training personnel from several large firms. In addition, participants in four of the five pretest runs were practicing managers from middle and upper organizational levels. Feedback from them was solicited actively after each run and incorporated where possible in future runs. We believe, on the basis of these informal inputs, that Looking Glass does a good job of simulating upper-level managerial jobs in profit-making organizations.

While hard data to support our assertions are scarce, we were able to compare the in-basket inputs of Looking Glass with Mintzberg's (1973) data from the in-baskets of five organization presidents. Table 1 summarizes the simulated in-baskets for the President and each of the three divisions of Looking Glass. The first row reports the average number of pieces received by the participants. The average manager in Looking Glass receives more pieces than Mintzberg's executives, indicating that our input may be slightly more than is typical. Because our only input to the simulation is through written messages, we feel that this slightly higher volume is necessary. At least six of the average nine excess pieces are background data that would not normally appear in a typical in-basket (e.g., an organization chart, public relations releases describing the technologies and the history of the company, job descriptions, etc.).

Row 2 of the table reports the average number of memos sent by each participant (and, therefore, written by us) prior to the start of the simulation. These represent letters and memos sent the day before by the average manager in Looking Glass. Copies of these, therefore, appear in the in-basket at the start of the simulation. The average, 7.3, is slightly lower than that reported by Mintzberg. We are comfortable with that because previously written memos are artificial--the style and contents might not jibe with what a given participant might have written. We, therefore, sought to keep this kind of memo to a minimum.

The last row of Table 1 shows the average number of pieces of mail (inputs plus outputs at the start of the

Table 1

Mail Inputs at the Start of the Simulation

	President	Managers In ¹		Looking Glass Total	Mintzberg, 1973	
		APD	IGD		Average	Range
Average number of pieces received	32	37.6	34.8	33.8	26.4	34.4 to 13.8
Average number of pieces sent to others	20	8.1	6.3	5.3	9.2	13.2 to 4.6
Average total number of pieces to be processed at the start	52	45.8	41.2	39.0	36	46 to 22

Note: Looking Glass totals are as of July, 1978.
Final editing of in-basket materials will
have minor effects on total numbers.

¹ There are seven positions in APD, six each in IGD and CGD.

simulation) to be processed by the average manager in Looking Glass. Overall, the total figure is close to what Mintzberg reported, though slightly higher, and is within the range he found. This is particularly encouraging since the research team did not use Mintzberg's figures as a priori guidelines.

Outputs

One might infer that input stimuli are valid if the outputs they generate approximate the outputs in real managerial settings. Again, we have relied on our own and others' direct observations of behavior during the simulation, as well as on the reports of participants themselves. It is our impression that the world of Looking Glass managers is varied, fragmented, fast-paced, primarily oral, and information-focused. These characteristics coincide with the results of diary and observational studies of managers in real organizations (McCall, Morrison, & Hannan, Note 5).

Debriefings with participants after the simulation have supported these conclusions as well as verified the involvement of the managers with the problems they faced. The presidential addresses following each run, as well as the divisional problem debriefings, indicated that an array of problems were identified and solved during the simulation runs. The majority of managers have reported that their behavior was typical and that they did not get distracted by artificiality. Many sorely missed their secretaries.

Harder output data are reported in Tables 2, 3, and 4. In Table 2, mail output generated during the last three runs of Looking Glass are compared with Mintzberg's (1973) results. The average Looking Glass manager produced 12.1 written outputs, slightly higher than Mintzberg's 9.2 but within his range of results.

Table 3 carries this mail analysis a step further by examining the input/output ratios from the last three runs of Looking Glass. The number of inputs received at the beginning of the simulation is divided into the average number of outputs produced. Overall, Looking Glass managers have a ratio of 34.2 percent, compared with Mintzberg's reported 35 percent. In terms of inputs and outputs of mail, the simulation is strikingly close to reality.

Table 4 reports data on the average number of phone calls made by Looking Glass managers. Mintzberg found that

the average manager made 5.3 calls in a day, while Looking Glass managers averaged 4.4 (the lower end of the range). This makes sense because managers in the simulation are geographically close to one another--it is presumably easier for them to walk over to someone than it would be in a real organization.

Summary

The evidence for the validity of Looking Glass is, at the present time, sketchy at best. It is, at the same time, encouraging. Systematic research is now underway to provide additional data on the validity issue. In the meantime, Looking Glass seems to have survived a few of the minimal tests. The informal data we have collected support, at least, the face validity of the simulation.

Table 2
Mail Outputs at the End of the Simulation

Average Number of Memos Written Per Participant	President	Managers In			Looking Glass Total	Mintzberg, 1973	
		APD	IGD	CGD		Average	Range
Bank	9.0	5.0	8.8	11.0	8.15	-	-
Manufacturing	11.0	11.4	14.0	14.0	13.0	-	-
Government	16.0	15.9	10.2	19.2	15.2	-	-
Overall average	12.0	10.8	11.0	14.7	12.1	9.2	13.2 to 4.6

Note: The length of the three simulation runs varied. Looking Glass ran for 6 hours at the bank, 6½ hours at the manufacturing company, and 5½ hours at the government. The amount of material written is apparently uncorrelated with the length variations.

¹ There were 20 managers in each run.

Table 3

Mail Input-to-Output Ratios

	<u>President</u>	<u>Managers In</u>		<u>Looking Glass Total</u>	<u>Mintzberg, 1973</u>	
		<u>APD</u>	<u>IGD</u> <u>CGD</u>		<u>Average</u>	<u>Range</u>
Average Mail Outputs (see Table 2)	12.0	10.8	11.0 14.7	12.1	9.2	13.2 to 4.6
Average Mail Inputs (see Table 1)	32.0	37.6	34.8 33.8	35.4	26.4	34.4 to 13.8
Input/Output Ratio (in percent)	37.5%	28.7%	31.6% 43.5%	34.2%	35%	62% to 16%

Table 4
Telephone Record

Average Number of Phone Calls Com- pleted per Person	<u>President</u>	<u>Managers In</u>			<u>Looking Glass Total</u>	<u>Mintzberg, 1973</u>	
		<u>APD</u>	<u>IGD</u>	<u>CGD</u>		<u>Average</u>	<u>Range</u>
Bank	4	4.6	3.7	8.2	5.4	-	-
Manufacturing	12	3.0	5.2	5.7	4.9	-	-
Government	9	2.6	3.5	1.8	3.0	-	-
Total, across runs	8.3	3.4	4.1	5.2	4.4	5.3	6.0 to 4.4

Organizational Variables

Can Looking Glass generate interesting data on major issues in organizational behavior research? While it is premature to answer that question on the basis of pretest runs, we did collect post-simulation data from the last three runs. Three issues were addressed directly: power, climate, and decision making. The data from these questionnaires can be viewed as a test of the simulation: Do the patterns conform to what would be expected in a company like this in real life? The results can also be viewed in terms of hypothesis generation: Do the patterns suggest something interesting that might be verified in other research?

Power

At the conclusion of each of the last three simulation runs, a questionnaire on perceptions of power was filled out by all participants. Since defining power is tricky (McCall, in press), the participants were given a vague definition in hopes that their personal frames of reference would guide their answers. The definition was as follows:

Power is difficult to define precisely, but most of us have a strong sense of what it means. It has to do with being able, for whatever reasons, to influence decisions, to get resources, to get one's way. We'd like you to think about Looking Glass, Inc., in terms of who had the power.

The first question focused on the three divisions and asked each participant in each of the three runs to rank order APD, CGD, and IGD in terms of their relative power within the corporation. The results are reported in the two parts of Table 5. Overall, the Advanced Products Division was seen as most powerful (average rank, 1.7), followed by Industrial Glass (2.0) and Commercial Glass (2.3). This corresponds exactly to the nature of the environment faced by each division: APD faces the most unstable environment and was rated most powerful; IGD faces the intermediate environment and was rated second most powerful; and CGD, facing the most stable environment, was rated least powerful. Sales of the division would not have predicted this (IGD has the largest), nor would age of the division (CGD is oldest), nor would overall financial stability (CGD has been

Table 5

Rank Ordering of Power by Division
(based on three runs)

A. Overall perceived power of the divisions:

<u>Division</u>	<u>Average Rank</u>
Advanced	1.7
Industrial	2.0
Commercial	2.3

(1 highest, 3 lowest)

B. Average power rank of divisions by division doing the ranking:

<u>Division Ranked</u>	<u>Division Doing the Ranking</u>		
	<u>APD</u>	<u>IGD</u>	<u>CGD</u>
Advanced	1.4	1.8	1.8
Industrial	2.4	1.4	2.3
Commercial	2.2	2.7	1.9

a consistent profit-maker). One possible explanation is suggested by the strategic contingencies approach to power which would suggest that the major issues confronting the organization are focused in APD. Because of the huge profits to be made in optical fibers and the enormous loss in integrated circuits (both APD products), such an explanation makes sense.

The second part of Table 5 breaks down divisional power rankings by the division doing the ranking. Two of the three divisions consistently rated themselves more powerful than the others. Perhaps perceptions of power are distorted in real organizations, too, and one wonders what causes the distortion and what effects it has on organizational behavior.

Table 6 summarizes data on the perceived power of the departments within Looking Glass: Sales/Marketing, Manufacturing, and Product Development. Participants ranked the power of the departments within their own divisions.

Overall, Manufacturing was seen as the most powerful department in every division. Some trends do emerge within divisions with, for example, Product Development rated second most powerful in Advanced (the high technology group) and least powerful in Commercial (the old and low technology group). In one run, Product Development was ranked more powerful than Manufacturing in the Advanced Products Division. In general, the data support the rationale behind the simulation. If these scores are stable, they will provide an excellent base rate for attempting power manipulations using experimental paradigms.

Table 7 expands the analysis further by reporting the rank order averages for Vice-President and Director levels in the organization. Overall, the Vice-Presidents were seen as the most powerful people, followed by Directors of Manufacturing, with Sales/Marketing and Product Development tied in the next spot. The trend is strong in APD for the Director of Product Development to have more power than the same position in the other divisions. Sales/Marketing is markedly lower in power in APD than in the other divisions. One might hypothesize that in a highly turbulent, high technology environment like APD, sales may be seen as an almost random event. A belief may develop that all the organization needs to do is stay ahead in technology and sales will take care of themselves.

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Table 6

Rank Ordering of Power, Departments within Divisions
(based on three runs)

<u>Department</u>	<u>APD</u>	<u>Division</u>		<u>Overall</u>
		<u>IGD</u>	<u>CGD</u>	
Manufacturing	1.6	1.4	1.3	1.4
Sales/Marketing	2.3	2.2	2.2	2.2
Product Development	2.0	2.2	2.5	2.2

(1 highest, 3 lowest)

Table 7

Rank Ordering of Power by Hierarchical Position within Division

<u>Hierarchical Position</u>	<u>APD</u>	<u>Division</u>		<u>Overall</u>
		<u>IGD</u>	<u>CGD</u>	
Vice-President	1.1	1.4	1.8	1.4
Director, Manufacturing	2.3	2.6	2.0	2.3
Director, Sales/Marketing	4.5*	2.9	2.4	3.1
Director, Product Development	2.8	3.2*	3.3	3.1

*Data from two runs only

(The President was not ranked. Each executive was ranked by members of his or her own division only. Plant Managers were ranked overall lower than Directors and have not been included in the table.)

(1 highest, 6 lowest in CGD and IGD, 7 lowest in APD)

The Plant Managers were ranked lowest overall in power, as would be expected. There have been, however, a number of dramatic swings in Plant Manager power across runs, indicating that individual differences may be operating. At higher levels, position seems to be a prime determinant of perceived power. At the Plant Manager level, personal initiative may be more important. Look, for example, at the power swings shown in Table 8.

While structural explanations hold nicely for the top three levels at Looking Glass, they are not adequate to explain the variance at the Plant Manager level. Nor does it seem plausible to argue that bank managers are systematically different in their perceptions than the other sample. (Data for the government sample on this issue are not available.)

Table 8
Plant Manager's Power

<u>Plant Manager Of</u>	<u>Average Power Rank</u>	
	<u>Bank Sample</u>	<u>Manufacturing Sample</u>
Optical Fibers	5.5	4.1
Capacitors	5.5	6.3
Integrated Circuits	7.0	6.3
(1 highest, 7 lowest)		
Flat Glass	6.0	4.8
Lighting Products	4.5	6.0
(1 highest, 6 lowest)		
Auto Glass	5.0	3.2
Specialty Glass	6.0	6.0
(1 highest, 6 lowest)		
(average ranks within own division)		

Summary

The data presented here do not raise serious questions about the reality of the simulation. As expected, APD emerged as the most powerful division, Manufacturing was seen as the most powerful function within divisions, and position in the hierarchy was the prime determinant of individual power. Nonetheless, there was sufficient variability in the rankings to stimulate further investigation. Most important, perhaps, is that participants do perceive differences in power distributions and can report those perceptions on a survey instrument.

Climate

Twenty items were selected from the Survey of Organizations (Taylor & Bowers, 1972) and adapted into a survey instrument used in the last three runs of Looking Glass. This instrument was included to see if participants could describe the climate of their organization.

Our first observation was that participants had no difficulty filling out the items from the Survey of Organizations. We thought we might get a general idea of what to expect from Looking Glass by computing the grand mean for each item. Listed below are the items with the highest and lowest overall ratings across the last three runs. The responses were on a five-point scale from "to a very little extent" (1) to "to a very great extent" (5).

Highest

- | | |
|---|------|
| (1) To what extent did you feel a responsibility to help the company be successful? | 4.06 |
| (2) When you talked to people in your division, to what extent did they pay attention to what you said? | 3.97 |
| (3) To what extent did you have a feeling of loyalty toward your division? | 3.83 |
| (4) How receptive were those above you to your ideas and suggestions? | 3.67 |
| (5) To what extent did people in your division maintain high standards of performance? | 3.60 |

Lowest

- | | |
|---|------|
| (1) To what extent did your boss show you how to improve your performance? | 2.30 |
| (2) How adequate for your needs was the amount of information you got about what was going on in other departments? | 2.33 |
| (3) To what extent did your boss offer new ideas for solving job-related problems? | 2.67 |
| (4) To what extent did different departments plan their work together? | 2.83 |
| (5) To what extent did your boss encourage people to exchange opinions and ideas? | 2.93 |

We were encouraged to see that Looking Glass engendered responsibility, loyalty, and high standards. The high ratings accorded these items support our observations that participants were involved with the simulation and trying hard to do their jobs well. The items rated low conspicuously involve subordinate perceptions of their bosses and a failure of communication within the organization. The fact that these rather common organizational problems emerged in Looking Glass was also comforting.

We then looked at items that reflected differences across runs and across divisions. Listed below are those items for which the mean ratings were the most different across runs:

	<u>Bank</u>	<u>Manufacturing</u>	<u>Government</u>
(1) How much did people in your division encourage each other to give their best?	2.8	3.2	3.4
(2) How receptive were those above you to your ideas and suggestions?	3.4	3.5	4.1
(3) To what extent did different departments plan their work together?	3.2	2.9	2.4

(4) To what extent was your boss willing to listen to your problems?	3.1	3.6	3.9
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The items that were most different across the three divisions of Looking Glass are listed next (average over three runs):

	<u>APD</u>	<u>IGD</u>	<u>CGD</u>
(1) How much did people in your division encourage each other to give their best effort?	3.5	3.0	2.9
(2) To what extent did people in your division help you find ways to do a better job?	3.6	2.8	3.1
(3) How much did people in your division encourage each other to work as a team?	3.4	2.7	3.1
(4) To what extent did people in your division exchange opinions and ideas?	3.9	3.3	3.6
(5) To what extent did different departments plan their work together?	2.8	2.6	3.2

These preliminary data indicate that different climates may emerge across runs and across divisions within runs. This is particularly exciting since the climate of Looking Glass forms in a relatively short period of time, and the process of its formation can be observed as it takes place.

In the manufacturing run, the managers asked us if the climate of Looking Glass was related to the climate of their real organization. We asked them to fill out the questionnaire again, this time describing their back-home jobs. The correlation of the means across the 20 items was .76, and all highs and lows were in the same direction.

Decision Making

We tried to find out something about the way managers were making decisions in Looking Glass. In one run, we gave out a general questionnaire about information sharing, decision quality, etc. We also gave one division (APD) a detailed questionnaire focusing on one major problem and listing specific information that had been available. On the general questionnaire, ratings were uniformly high: Participants said information was widely shared, they made inputs to decisions, decisions were of high quality, etc. On the specific questionnaire, however, it was clear that substantial amounts of information were not shared, only a few people made decisions, and decisions were not made at all or were of low quality. We quickly deduced that specific questions about decision making produced dramatically different results than did general items--results more closely approximating what we observed.

The specific questionnaire was based on a major problem facing APD. The questionnaire contained a complete list of information available and asked division members to indicate which pieces they had been aware of. It then tied these bits of information into four components and asked if the components had been defined, if decisions had been made on them, and if they had been tied together into the larger problem. Across two runs, the results were as follows:

- (1) About 60 percent of the information was shared among the seven division members.
- (2) All four problem components were identified less than half the time.
- (3) The four components were never tied together into a generic problem, even though managers agreed after discussion that they were related.
- (4) Only one or two people made all the decisions, and decisions were made only about 35 percent of the time.

We concluded from the questionnaire results and the discussion of them that problems in the division had been attacked in a particularistic fashion and treated in a cognitively simple manner. This corresponds with other studies of decision making (e.g., Katz & Kahn, 1966; Mintzberg, Raisinghani, & Theoret, 1976) and increases our confidence that Looking Glass can be a useful research tool for exploring such issues.

More important, perhaps, we know now that decision processes in the simulation can be tracked, both by questionnaire and by direct observation.

Overall

These preliminary data are encouraging. Looking Glass seems to be generating realistic managerial behavior in an environment similar to a real organization. Participants can describe their perceptions on fairly typical instruments and on common topics in organizational behavior. There is enough variance in their behavior and their survey responses to permit statistical analysis when larger samples have accumulated and measurement procedures have been standardized. While such statements must be taken on faith at the present time, we can say with some assurance that the data collected so far do not provide negative evidence about the validity of the simulation. The manager-participants are the best judges of whether Looking Glass is close to reality, and their verdict up until now is positive.

Over the next year we will collect systematic data from a minimum of ten simulation runs. These data will include specific behavioral and performance measures. A time sampling procedure, adapted from diary and observational studies of managers, will be used to assess managerial activities and interaction patterns. The results from Looking Glass will be compared to results from managers in real organizations.

Performance measures on the corporate and divisional levels of Looking Glass are being developed by outside experts (including several board chairmen). In addition, Looking Glass problems are being categorized according to selected organizational effectiveness dimensions (Steers, 1977). These measures will be used to establish a performance base rate for Looking Glass.

Other measures, including climate, power, and decision making, will be administered systematically across the runs. By September, 1979, we should have solid data on the simulation's validity (or lack thereof), norms, and potential.

Pros and Cons of Looking Glass as a Research Tool

In this section we have discussed a variety of research questions, measurement strategies, potential manipulations, and preliminary data involving the Looking Glass simulation. It is only fitting to conclude this exposition on research uses by attempting to summarize the relative pros and cons of Looking Glass as a research tool. The summary assumes that the simulation is a valid vehicle for representing managerial work--an empirical question.

Pros

Looking Glass provides a realistic context for studying a diverse array of variables. Using known inputs, the simulation permits measurement of attitudes, behavior, and outcomes at individual, group, and organizational levels of analysis. Each division was designed to face a different external environment, thereby permitting consideration of macro and micro issues with the same research vehicle. Eventually, outcome and process variable norms will be available for use in comparative research.

The simulation, modeled on "typical" manager behavior, is easily amenable to experimental intervention. Without substantially altering content, crises can be introduced, structure changed, samples manipulated, etc. The impact of the interventions can be viewed in the context of a complex organization.

Looking Glass is an excellent vehicle for generating new hypotheses, using experimental manipulations for testing theories normally dependent on natural variation, and collecting preliminary data for later verification in field settings. It is long enough to observe complex processes, such as power, as they develop and play-out. Further, it is psychologically strong, so it generates real behavior by the individuals involved.

Cons

Looking Glass is clearly inappropriate for a number of research purposes. For example, only seven managers in Looking Glass have live subordinates--it might be inefficient to use the simulation to study questions focused only

on leader-subordinate interactions. Because each position in Looking Glass is different, it does not provide the same stimuli to all participants. Individual assessment, therefore, is confounded by any differences in the nature of positions within the company.

Looking Glass is holistic. Behavior within it is influenced by a variety of forces, some built-in and many others generated by the participants themselves. Its major value is this holism and complexity. "Everything else being equal" research questions should be asked in controlled laboratory settings, not in this simulation.

Looking Glass, no matter how realistic it may be, is not a real organization. Data generated in the simulation will need to be verified in field settings. Nonetheless, variables not normally manipulable in the field (such as environmental characteristics and organization structure) can be manipulated in Looking Glass. Thus, the simulation might generate more explanatory power for naturalistic variations found in the field. The simulation should be used in conjunction with, not to the exclusion of, other methodologies. Such conjunction might consist of using the simulation to generate hypotheses worth testing in the field; or it might involve using the simulation late in a research program to scrutinize causal issues suggested but not verified in field settings.

Sampling may represent a problem with Looking Glass. As will be explained in the section on training uses, Looking Glass can be a powerful experience for managerial participants. Participation should, therefore, be voluntary. Voluntarism, coupled with practical constraints on random assignment to roles, may create research problems. Since access to executive positions in real organizations is obviously not random, the magnitude of this problem in the simulation will depend on the researcher's rationale for role assignment and participant selection.

Another possible con of the simulation involves convenience. While we have worked hard to simplify the administration of Looking Glass (e.g., it involves little elaborate equipment), it is still a time-consuming measurement strategy. Practically speaking, assuring adequate numbers of participants over multiple runs is more likely if the simulation is used as an ongoing training device in corporate programs or as a teaching tool in university curricula (for example, in MBA programs). Use of Looking Glass in such settings can create tensions between research control and training flexibility. In many ways these tensions

are an asset because they force researchers to pay attention to the meaningfulness of the data they collect (e.g., can the data provide any useful insight to participants?) and force trainers to examine the validity of their training approach (e.g., "How do we know that what we are teaching people is 'real'?").

We obviously do not feel that the cons outweigh the pros. The goal of any research program is to use the most effective research methods to generate interpretable data. We think Looking Glass has a place in the ongoing research on leadership in organizations. Simulation is a research tool that has been underused--one that can generate new insights.

Reference Notes

1. Lombardo, M. M. Looking at leadership: Some neglected issues (Tech. Rep. No. 6). Greensboro, N.C.: Center for Creative Leadership, 1978.
2. Weick, K. E. Laboratory experimentation with organizations: A reappraisal. Paper presented at the National Academy of Management, New Orleans, August 1975.
3. MacKinnon, D. W. An overview of assessment centers (Tech. Rep. No. 1). Greensboro, N.C.: Center for Creative Leadership, 1975.
4. Morrison, A. M., McCall, M. W., Jr., & DeVries, D. L. Feedback to managers: A comprehensive review of twenty-four instruments (Tech. Rep. No. 8). Greensboro, N.C.: Center for Creative Leadership, 1978.
5. McCall, M. W., Jr., Morrison, A. M., & Hannan, R. L. Studies of managerial work: Results and methods (Tech. Rep. No. 9). Greensboro, N.C.: Center for Creative Leadership, 1978.

References

- Cohen, M. D., & March, J. G. Leadership and ambiguity: The American college president. New York: McGraw-Hill, 1974.
- Drabek, T. E. Laboratory simulation of a police communications system under stress. Columbus: Ohio State University, College of Administrative Science, 1969.
- Duncan, R. Characteristics of organizational environments and perceived environmental uncertainty. Administrative Science Quarterly, 1972, 17, 313-327.
- Fromkin, H. L., & Streufert, S. Laboratory experimentation. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology. Chicago: Rand McNally, 1976.
- Guetzkow, H. A. A decade of life with the international simulation. In R. G. Stogdill (Ed.), The process of model-building in the behavioral sciences. Columbus: Ohio State University Press, 1971.
- Hickson, D. J., Hinings, C. R., Lee, C. A., Schneck, R. E., & Pennings, J. M. A strategic contingencies' theory of intraorganizational power. Administrative Science Quarterly, 1971, 16, 216-229.
- Hollander, E. P. The reliability of peer nominations under various conditions of administration. Journal of Applied Psychology, 1957, 41, 85-90.
- Howard, A. An assessment of assessment centers. Academy of Management Journal, 1974, 17, 115-134.
- Katz, D., & Kahn, R. L. The social psychology of organizations. New York: Wiley, 1966.
- Lawrence, P. R., & Lorsch, J. W. Organization and environment: Managing differentiation and integration. Boston: Harvard Business School, 1967.
- Lorsch, J. W., & Morse, J. J. Organizations and their members: A contingency approach. New York: Harper & Row, 1974.
- McCall, M. W., Jr. Leaders and leadership: Of substance and shadow. In J. R. Hackman, E. E. Lawler, III, & L. W. Porter (Eds.), Perspectives on behavior in organizations. New York: McGraw-Hill, 1977.

- McCall, M. W., Jr. Power, influence, and authority: The hazards of carrying a sword. In S. Kerr (Ed.), Organizational behavior. Columbus, Ohio: Grid, in press.
- McCall, M. W., Jr., & Lombardo, M. M. (Eds.). Leadership: Where else can we go? Durham, N.C.: Duke University Press, 1978.
- Mintzberg, H. The nature of managerial work. New York: Harper & Row, 1973.
- Mintzberg, H., Raisinghani, D., & Theoret, A. The structure of "unstructured" decision processes. Administrative Science Quarterly, 1976, 21, 246-275.
- Nealy, S. M., & Fiedler, F. E. Leadership functions of middle managers. Psychological Bulletin, 1968, 5, 313-329.
- Olmstead, J. A., Cleary, F. K., Lackey, L. L., & Salter, J. A. Development of leadership assessment simulations (HumRRO Tech. Rep. 13-21). Alexandria, Va.: Human Resources Research Organization, September 1973. (NTIS No. AD-772 990)
- Payne, R., & Pugh, D. S. Organizational structure and climate. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology. Chicago: Rand McNally, 1976.
- Pugh, D. S., Hickson, D. J., Hinings, C. R., & Turner, C. The context of organization structures. Administrative Science Quarterly, 1969, 14, 91-114.
- Schroder, H. M., Driver, M. J., & Streufert, S. Human information processing: Individuals and group functioning in complex social situations. New York: Holt, Rinehart & Winston, 1967.
- Schultz, R. L., & Sullivan, E. M. Developments in simulation in social and administrative science. In H. Guetzkow, P. Kotler, & R. L. Schultz (Eds.), Simulation in social and administrative science: Overviews and case-examples. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
- Slovic, P. Psychological study of human judgments: Implications for investment decision making. Journal of Finance, 1972, 27, 779-799.

- Steers, R. M. Organizational effectiveness: A behavioral view. Santa Monica, Cal.: Goodyear, 1977.
- Taylor, J. C., & Bowers, D. G. Survey of Organizations: A machine-scored standardized questionnaire instrument. Ann Arbor: University of Michigan, Institute for Social Research, 1972.
- Terreberry, S. The evolution of organizational environments. Administrative Science Quarterly, 1968, 12, 590-613.
- Thompson, J. D. Organizations in action. New York: McGraw-Hill, 1967.
- Weick, K. E. Laboratory experimentation with organizations. In J. G. March (Ed.), Handbook of organizations. Chicago: Rand McNally, 1965.
- Weick, K. E. Educational organizations as loosely coupled systems. Administrative Science Quarterly, 1976, 21, 1-19.
- Weick, K. E. The spines of leaders. In M. W. McCall, Jr., & M. M. Lombardo (Eds.), Leadership: Where else can we go? Durham, N.C.: Duke University Press, 1978.
- Zelditch, M., Jr., & Hopkins, T. K. Laboratory experiments with organizations. In A. Etzioni (Ed.), Complex organizations: A sociological reader. New York: Holt, Rinehart & Winston, 1961.

III. Training with Looking Glass

Training with Looking Glass

Looking Glass is a stimulus, not a training program. That is, it is a device for generating managerial behavior; using that behavior to affect individual or group change requires additional pieces. Our initial work with Looking Glass has focused on developing a valid stimulus, not on using that stimulus to change behavior. We have, however, worked closely with the training staffs from organizations during the pretest runs and have discussed at length the uses of Looking Glass as a training tool. This section of the manual will summarize some of our early thinking but will not lay out detailed training designs. Each organization has different training needs, and use of this simulation should be considered in light of those specific needs. Our goal, then, is to stimulate thought on how Looking Glass might be used in an educational program.

This section will begin by examining some of the major advantages of the simulation as a training stimulus. Some ways it can be used will be outlined, followed by some philosophical concerns generated by our experience with training and simulation. The final section will outline one approach to using Looking Glass in a management development sequence.

Advantages of Looking Glass as a Training Stimulus

As we see it, Looking Glass has five major advantages: validity, power, contextual richness, comprehensiveness, and flexibility. Each of these will be examined briefly below. We recognize that advantages are relative; that specific training objectives should dictate what technique is chosen. Our experience with management development programs (in both educational and organizational settings) is that: (1) experiential learning is widely accepted and practiced, and (2) that the experiences used as a basis for the training in typical development programs are unrealistic, simplistic, and narrow. Neither of these observations would matter if we had convincing evidence that training was effective. Unfortunately, research on training effects, especially the effects of management training, is far from encouraging (Campbell, 1971; Campbell, Dunnette, Lawler, & Weick, 1970; Stogdill, 1974). One of the many reasons for this may be that processes of management (such things as making financial decisions, motivating subordinates, styles of decision making) are typically trained outside of the context in which managers work. Thus, we may train a manager to allow subordinates to participate in decision making without considering what that means in a fast-paced, diverse, fragmented managerial environment. The relative advantages of Looking Glass are, therefore, framed in respect to more typical experiential stimuli used in management education--NASA exercises, computer games, role plays, and the like.

Validity

Many trainers seem to feel that any exercise that produces behavior is okay, since the behavior can be processed to make training points. The emphasis is on processing the data rather than on the validity of the data or of the exercise that generated them. This may be correct, but it could be argued that one reason training does not seem to transfer back to the job is precisely that the training experience is so far removed from what it is like to actually manage in a complex organization.

One advantage of Looking Glass, then, is that it is an attempt to create a valid managerial experience that can be used as a training base. Issues surrounding the validity of Looking Glass were discussed in the research section of this manual (see pp. 69-76). Preliminary evidence is encouraging

but not yet conclusive. Until we have collected more data, we are prepared to argue that the process by which Looking Glass was developed gives it an advantage over the vast majority of exercises used in training. The issues and problems confronting participants in Looking Glass were generated by managers, not by researchers or trainers. The behavior generated is, by participants' testimonials, representative of what they do back-home and reasonably in line with at least one observational study of what managers do (see pp. 69-76).

Power

It can be argued that it is easier to deny the meaning of one's behavior in an artificial exercise than in a realistic one. To the extent that our validity contentions hold, Looking Glass captures real managerial problems, and participants are doing what real managers do. This means that the relevance of the behavior is difficult to deny. A manager might dismiss mistakes in choosing survival items in a moon crash, but it is another matter entirely to permit a major plant to shut down unnecessarily. The latter has clear relevance for performing the managerial role.

Contextual Richness

Management is embedded in an organizational context. Managers live in a complex world of fragmented information, ambiguous problems, crises, routine, etc. Evidence from observational and diary studies shows that what managers do is very much influenced by the environments in which they work (see McCall, Morrison, & Hannan, Note 1, for a review of these studies). Looking Glass attempts to preserve the managerial environment--to capture the circumstances that surround, and elicit, managerial action.

Comprehensiveness

Precisely because of its contextual richness and presumed validity, Looking Glass generates a broad range of managerial behavior. In this simulation one can observe politics, motivation, decision making, information gathering, communication, interpersonal style, group dynamics, leadership, problem finding, conflict, evaluation, authority

relations, and other major processes of organizational behavior. Unlike experiences that isolate one or two of these elements, Looking Glass preserves the complex interplay among processes that characterizes managerial life in an organization. It forces recognition that any given element of managerial activity does not take place in a vacuum. For training to be both practical and transferable, it cannot treat these processes as if they were isolated.

Flexibility

Looking Glass is flexible in terms of its uses as a stimulus and the ease with which it can be dissected for analysis. Some of the uses will be listed later in this section. The dissection simply means that specific pieces of the simulation can be repeated easily as part of a training sequence.

Suppose that one part of a training sequence is to focus on decision making. Basic data on how participants make decisions in a complex environment can be gathered during a full simulation run. Later on, as part of the training program, participants can confront the same or similar problems again, this time with a training model to guide them.

For example, Looking Glass must decide whether or not to sell the integrated circuits plant. During the simulation, this is only one of the many important issues to be decided. By pulling out all the relevant information on the problem later on, participants can make that decision again. The process and outcome of the two decisions can be compared, hopefully showing how the training model improved the quality.

Looking Glass is also flexible in that the three divisions are autonomous. Participants can repeat the experience by switching divisions and roles in a second run. The problems and issues will be different the second time, permitting practice of new skills. The structure of the company can be altered as well.

In summary, Looking Glass appears to have many advantages for training. It is, as far as we can tell, a valid tool for generating managerial behavior. Its contextual richness and validity make it powerful--the learning it engenders is relevant to real managerial work. Its comprehensive coverage of organizational phenomena makes it

appropriate for a variety of training topics. This comprehensiveness, coupled with the design features of the simulation, makes it possible to use Looking Glass in a variety of training settings for a variety of purposes. Further, it is based on middle- and upper-level management and preserves the complex interplay between analytic and interpersonal demands of those jobs.

Some Uses of the Looking Glass Simulation

Use of Looking Glass as a training tool has been limited. Development of training programs is currently underway in two organizations, but results of these efforts will not be available until late 1979. Three of the pretest runs included one training day devoted to generating feedback to participants on: (1) how their peers and the observers perceived them, (2) the ways they went about identifying and solving problems, (3) the kinds of climate and power distributions they created in the company, and (4) their own plans for changing their behavior. This training day was well received, but we feel that it only scratched the surface of Looking Glass's potential. A schematic for the simulation plus a one-day program is presented in Figure III-1. We recommend it, or something like it, as a minimal return for participation in the simulation.

Figure III-1

Example Schedule for a
Minimal Training Program with Looking Glass

Day 1

8:00	Introduction
9:00	Simulation
3:00	President's address
3:30	Questionnaire administration
4:30	Ventilation period
4:45	Divisional debriefing and problem analysis
6:00	Wrap-up and preview of next day

Day 2

8:30	Divisional debrief and problem analysis, concluded
9:30	Survey results and mini-lectures <ul style="list-style-type: none">- Power and influence- Organizational climate
11:00	Discussion of feedback and distribution of peer evaluations
12:00	Lunch
1:00	Individual work: self-assessment and personal development planning
3:00	Sharing plans in small groups
4:15	Wrap-up and program evaluation
4:45	Adjourn

Listed below are several other possible uses of the simulation in training and educational settings. We suspect that most of these uses would require three to five training days, with one of those days devoted to the simulation itself.

Use as a Diagnostic and Feedback Tool

Looking Glass clearly provides a setting for generating feedback on individual managerial behavior. Peer and observer ratings can be generated in such areas as interpersonal style, communication, problem solving and decision making, innovation in business decisions, etc. The use of an in-basket permits additional analyses of written communications. While only 7 of the 20 participants have subordinates in live roles, 19 have a boss. Thus, Looking Glass is a good setting for examining subordinate-boss relationships, but is less adequate for looking at boss-subordinate interaction. For those without live subordinates, written memos do provide some data pertinent to boss-subordinate issues. Since it is fairly common for subordinates to be geographically distant from their bosses, these data can be extremely relevant.

A major advantage of Looking Glass as a diagnostic tool is that the behavior of participants is embedded in a realistic managerial context. A participant, for example, is not receiving feedback on decision making--(s)he is getting feedback on how (s)he makes decisions in the context of other managerial activities and obligations. Managers often describe themselves as jugglers, keeping many different issues, problems, fires, and responsibilities in the air all at once. Looking Glass can provide information on how well managers are doing this.

We suggest that trainers using the simulation as a diagnostic tool concentrate on: (1) collecting behavioral data during the simulation, (2) presenting these data to participants in understandable chunks, and (3) helping managers interpret the data for themselves. It seems to us that real change will occur only if the individual takes responsibility for and is committed to the change. Trainers can help by working with individuals and groups to identify areas of concern and to find resources for implementing plans.

Diagnostic uses of Looking Glass are likely to be its most common application in organizational training settings.

Later in this section, we will take a detailed look at some learning assumptions and outline a "generic" approach to using the simulation as a lead into management development sequences.

Use in the Classroom

It is our observation that many graduate programs prepare students for managerial and administrative jobs in organizations without ever exposing them to the jobs they will eventually hold. While we do not view Looking Glass as a substitute for experience in real organizations, we think it can serve a valuable role as an intermediate step. It can serve as a common stimulus for students to confront organizational problems while still in the classroom. Because it is common experience, and because the instructor knows exactly what the issues are and how they were handled, Looking Glass provides an unusually concrete data base for examining major issues.

One such educational use would be as part of an MBA curriculum. Good MBA programs provide exposure to organizations through case studies and/or computer simulations of business problems. We feel that Looking Glass can complement these approaches by putting students in realistic managerial roles in a fairly typical organizational setting. It can be viewed as a live case study, and it puts financial decision making into the larger context of managerial work.

In thinking about Looking Glass in MBA or similar programs, we felt that appropriate placement would be at the end of the first year or third semester of a typical two-year program. By this point, students will have a variety of particularistic skills that they can try to implement amidst the fragmentation, variety, and pace of the managerial job. The simulation could be used in a pre and post mode as well, permitting assessment of learning during the program.

Other graduate programs aimed at preparing individuals for research careers might also use the simulation. Programs in organizational behavior, organizational psychology or sociology, and industrial psychology are often long on theory and method but short on "hands-on" experience. A major problem, of course, is that there are so many theoretical and methodological issues to master that experience must be sacrificed or left up to the individual student to obtain independently. We feel that Looking Glass can provide these

students with a taste of managerial life in an organization and can do so in an efficient way. Debriefing can focus on organizational issues as research problems, how well different theories can explain what went on, how various concepts might be measured, and so on. As a side benefit, students are exposed to simulation as a research method and can analyze the pros and cons of this kind of tool.

Looking Glass could also serve a useful role in programs training organizational change agents. It can be used as an experiential testing ground for intervention, its control permitting assessment of how well the intervention worked or what went wrong. Further, it could be used in several different ways. For example, students might practice entry skills by trying to gain access to Looking Glass while it is being run by real managers. Or, they might serve as consultants to Looking Glass during managerial runs. Other exercises might require them to take the Looking Glass materials, diagnose the company's organizational problems, design a change effort, and then actually implement the change in a run of the simulation.

Our pretest runs, which included graduate students, educational administrators, bankers, manufacturing managers, and government officials, suggest that the value of the simulation is not restricted to people interested in industrial settings. Many aspects of management seem common to a variety of organizational types, and managers from very different settings have commented on the realism of the simulation. We, therefore, think Looking Glass could be used effectively in graduate programs in hospital, public, and educational administration.

It might also serve an important function in the training of organizational systems designers. One criticism of operations researchers and designers of management information systems, for example, is that they don't always understand what information managers need, how they use it, and the constraints managers operate under. It would be interesting to use the simulation as a device for teaching (1) managers how to use these valuable staff resources, and (2) staff resource people how to work effectively with line managers. Because Looking Glass has a primitive (at best) formal information system, it would be a fertile arena for managers and staff to work together in designing a useful Management Information System.

Use in Team Building

By bringing intact work groups into the simulation, Looking Glass could be used as a diagnostic and team-building vehicle. Because the problems and the context are realistic, the consultant can observe the management team in action. After establishing how the team currently works (hopefully supplementing simulation data with observations from back on the job), problems from the simulation might be replayed using new strategies. In short, participants can practice new skills prior to trying to implement them back on the job.

Setting Expectations for New Managers

Recent research on turnover (e.g., Wanous, 1977, pp. 126-135) indicates that a major reason people leave new jobs is that they had unrealistic expectations of what the job would be like. This is probably especially true of specialists who assume managerial roles for the first time. The scientist-cum-manager is a classic example, since the work patterns of the two jobs are dramatically different. Whereas the scientist is often a specialist, used to long reflective periods and intense focus on only a few problems at a time, the manager is usually a generalist, with little reflective time and constant juggling of many problems. The simulation might serve to reduce this culture shock by providing the would-be manager with a taste of what the management job is like and how to prepare for it.

Creating Awareness

One personnel manager in a pretest run of the simulation found himself in a manufacturing manager role. After the simulation, he realized that he had put all the personnel issues--his major areas of concern on the job--at the bottom of his in-basket. He felt he had gained enormous insight into problems he was having getting line managers to take personnel issues seriously. His experience suggests a variety of uses for Looking Glass as a role reversal, awareness-generating experience. Trainers, personnel specialists, and other staff people can become line managers for a day, perhaps gaining an understanding of what it's like on that side of the shop. Top executives can play lower management roles to refresh their memories of what it's like to have less influence. Line managers might take a shot at the problems facing a staff position like product development.

Training Managers to be Change Agents

Managers are constantly creating change in their organizations. They reorganize, alter structure, create and change policies and procedures, assign work, etc. Yet, managers are seldom trained or even helped with this process. McCall (Note 2) has argued that leadership can be viewed as a design problem, and that by thinking like designers, managers might be more effective. Looking Glass could be a vehicle for helping managers think more systematically about change. After running the company, for example, they might analyze the structure, procedures, policies, etc., with a goal of redesigning Looking Glass. They might be asked to think about the different environments facing the divisions and assess the existing structure against the environmental demands. They might be asked to examine the different functional responsibilities and consider how structural changes might affect the way they got information and solved problems. As a final exercise, they might run Looking Glass again, implementing whatever changes they had designed.

Use in Skill Building

Because Looking Glass is holistic, many managerial skills are required for a participant to function effectively. As was mentioned earlier, the simulation can be used to diagnose skill strengths and weaknesses. It can also be used to build skills. For example, specific relevant problems related to skill areas might be selected from the simulation materials. These could be expanded into case studies, role plays, behavior modeling tapes, and so on to permit extended skills practice. By running the simulation after skill development, the problems and similar issues could be tackled by the now-trained managers. More than just practice or assessment, however, the simulation would require managers to use their new skills in the context of the other aspects of management work. This could facilitate transfer of skills back to the job, where many processes and skills are called upon simultaneously.

Training might be accomplished around infrequent but highly important problems. Air crew training, for example, has long used simulations to develop skills in dealing with infrequent but important events. Similar uses might be found for Looking Glass as a managerial training tool. Crises could be added (see p. 60) so that managers could look intensively at their responses and the consequences. The management team might then focus on building contingency plans for real world problems, designing training for new managers, and so forth.

Use in Training Needs Identification

One of the toughest problems faced by training departments is the identification of primary training needs within the organization. Training time and resources are usually limited, so a natural goal is to optimize programming around major needs. Often, needs analysis is based on personal observation, the opinions of a few key managers, or a survey study. Our experience with Looking Glass suggests that it may be a powerful tool for diagnosing training needs because it allows the trainers to observe how managers approach a wide variety of problems and issues.

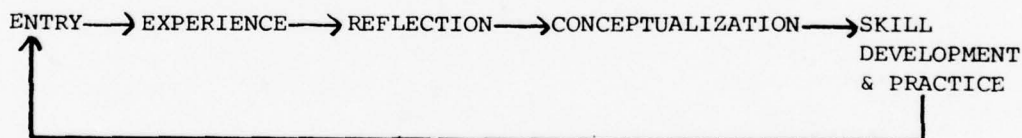
Several different samples of managers might be selected from various parts of the organization. Each group could be observed to diagnose its particular needs, and behavioral observation in the simulation could be supplemented with more traditional survey methods. After several samples had gone through the simulation, trainers might have both a better idea of what the training needs are and enough observations to begin developing training curricula to work on them. The simulation might also be used later to assess the impact of training by seeing whether or not trained managers can, in fact, handle the particular problems more effectively.

Needless to say, the list of possible uses for a simulation of this type could go on. We hope that the ideas presented here will stimulate other ideas and that people will try them out. In conjunction with human resource executives in several firms, we are currently developing programs for diagnostic training uses of the simulation. In the next section we will share some of our preliminary thoughts, based on our experience during the developmental runs of Looking Glass.

An Approach to Training with Simulation

The managerial job is tough and complex. Equally tough is training individuals to do such jobs. Training resources are usually tight, particularly managers' time to participate in training programs. Trainers are further hamstrung by the lack of knowledge about what effective managers do--a lack of knowledge reflecting the current state of the art in leadership research. Given that trainers are seldom in a position to tell managers "how to do it," their task becomes helping managers learn for themselves. Doing this suggests a training paradigm involving: (1) creating a setting in which managers behave, (2) generating valid feedback on the effects of the behavior, (3) facilitating interpretation of the feedback and exploration of alternative ways of behaving, and (4) exposure to relevant learning opportunities and practice. We feel that Looking Glass is a setting in which managers do behave typically and in which they deal with a variety of important managerial issues. It is, therefore, a useful device for initiating the process described above. Precisely because it is holistic and broad, it is a logical introduction to a larger management development sequence.

Our bias, then, is to focus management development on helping managers learn how to learn. This means helping them hone their own skills for generating feedback, interpreting it, and changing behavior. This goal is compatible with a simple training model (based on work by Kolb, Rubin, & McIntyre, 1971, p. 355) as the following:



This approach can be examined by means of a hypothetical example. Below we will outline an introductory program for a corporate management development sequence. The program is designed around the five phases shown in the model, with Looking Glass as the experience phase.

Entry

The entry phase involves up-front contracting between participants and trainers. It is a process of clarifying

what the training experience is all about, exploring the goals and needs of both participants and trainers, and creating the kind of environment in which learning can take place. We do not feel that development is done to managers; they are ultimately responsible for developing themselves. The trainer can provide an environment, experiences, data, alternatives, and counseling. Defining this role, and placing responsibility for learning squarely on the shoulders of the learner, is the major goal of the entry phase.

The goal of this hypothetical program is to help managers look at their own behavior, diagnose that behavior, and plan for their own development. The entry phase, therefore, is a period of contracting in which this goal is made explicit and participants make an informed choice about participating in the program. This means that the kind of experience planned, the nature of the data to be collected, confidentiality, ownership, the use of the data, and the consequences of attendance need to be spelled out prior to individual commitments to the program. In short, participation should be voluntary and informed. These issues should be addressed as individuals are invited to participate, usually a few weeks before the program starts.

Even though the nature of the program has been spelled out beforehand, there is another crucial entry phase. Diagnostic experiences, be they at the doctor's office or in a training program, often raise anxiety. We feel that the simulation should be preceded by a short warm-up session the night before it starts. This might be a cocktail party/business meeting in which: (1) participants have time to meet each other and the staff, (2) the goals and schedule of the program are reviewed, and participants are given a chance to input and the choice to withdraw, (3) participants are asked to think about their learning objectives for the next few days (perhaps writing them down for future reference), and (4) the simulation itself is introduced.

Several events may take place prior to this evening session. These could take the form of questionnaire administration to subordinates of participants, providing participants with part of their in-basket and their role assignments (see Administration), etc. The evening will then make more sense as the participants meet the people in the other simulated roles and hear about the corporation they will run. It will also serve to reduce the "getting acquainted" period at the beginning of a simulation when participants do not know one another.

The entry phase concludes the next morning when Looking Glass procedures are explained, including how to make phone calls, send memos, and so forth.

Experience

The experience phase has as its major goal the generation of behavior. We believe that Looking Glass can serve this function effectively and validly, providing a much more realistic behavior sample than most other devices of its ilk.

For the next six hours, the twenty participants manage the corporation. During this period, observers collect data on the managerial variables of interest. Trainers and observers should resist any temptation to interview or to interact with participants during the simulation run. Any such actions are likely to change participant behavior, possibly reducing the power of the experience.

At the end of the simulation, immediately following the President's Address, the participants fill out a variety of questionnaires. These might include ratings of their peers, climate and power measures, and questionnaires on how individuals solved problems, how much information they had, and so on. These data will be summarized and given back later in the program.

Reflection

Understanding one's behavior requires a period of reflection and feedback, in which a participant can mull over what happened and share information with others. This is a critical phase if the responsibility for learning is really the learner's. It is the participant who must deal with the impact of his or her behavior, and the trainer's main responsibility is to see to it that the learner has valid data to work with.

Following the questionnaire session, each division of Looking Glass meets separately with its observers and a trainer (the President goes to the division he or she worked most closely with). An unstructured period follows where participants talk about their experience and their reactions to it. This provides an opportunity for them to ventilate--a necessary phase before participants are ready to come to grips with the issues. Expect, at this point, to hear some

attacks by some participants on the simulation. Some of these will be legitimate concerns about artificiality, others may be various forms of denial. We suggest that the trainer simply listen and reflect feelings--attempting to defend the simulation during the ventilation period will only exacerbate any defensiveness already present. It has been our experience that the debriefing/training experience to follow will vindicate the simulation.

Once the participants have had a chance to air their reactions, the group should turn to specific issues. There is generally a lot of interest in "How did I do?," and we recommend a structured group discussion of how the division tackled problems. After trying this several ways, we prefer to let division members take the lead by first listing (on flip charts) what they considered the most important problems facing their division and their particular position. After the listing, the group can choose the problems that most challenged them and track them through. We have asked such questions as: Who first recognized the problem? Who defined it? Who had information related to the problem? How much of the information was brought together? What alternatives were considered? Who finally made a decision? What was the decision? How did others feel about it?

The day ends by bringing all the participants back together for a general discussion. Sometimes participants feel a letdown after the divisional meetings because they made some mistakes. The final group session aims at ending the day on an upbeat note, asking participants to reflect overnight on what they did and what they might hope to learn during the rest of the program. This can be accomplished by informal small group meetings or by individual written assignments.

The second day begins the reflective period in earnest. During the day, participants receive data describing their behavior during the simulation. This includes peer ratings and survey data collected after the simulation, information collected from back-home settings, problem lists and alternative solutions from the managerial positions they held, etc. It will probably require a full day to explain the data, give them back, and facilitate individual and group analysis.

Conceptualization

It can be difficult for participants to digest, much less interpret, all the data fed back during the reflection

phase. The training staff can serve a useful function by helping participants conceptualize. This may take the form of presenting theoretical frameworks, individual counseling, or group facilitation. The conceptualization phase has as its major goals: (1) putting the data together so that meaningful patterns can be seen, and (2) helping participants evaluate what's good, what's bad, what can be changed, and what change priorities make sense. Again, the emphasis is on helping the learner make informed choices--to help others exercise their responsibility for learning.

The third day of the program, then, consists of a series of structural exercise and staff presentations to aid participants in identifying their managerial strengths and weaknesses. Once identified and refined, the strengths and weaknesses can be used to set change priorities and develop practical change strategies.

If the program is not to include skill building, the staff would end the day by presenting training opportunities available within the company or through outside agents and working with individuals to match their needs with various options.

Skill Development and Practice

The last phase, skill development and practice, can be visualized as a smorgasbord of options available to individuals. The first four phases were diagnostic, the last phase involves change. The cafeteria of opportunities may include things like formal training modules in specific skill areas, job change and transfer, career counseling, and exposure to new experiences.

One way to use Looking Glass in skill development is to replay selected parts of the simulation. For example, a small group of managers might meet to solve the integrated circuits problem, this time with complete information and no distractions. A series of these experiences might help individuals clarify further their strengths and weaknesses, as well as aid in generating alternative approaches to various management issues. The small groups would emphasize learning from each other.

The initial three- to five-day program would be followed by on-the-job follow-up, other training programs, and individual help with developmental plans. It is critically important that Looking Glass be integrated into an ongoing sequence if its initial use is as a diagnostic tool.

Program Schedule

A schedule for the program outlined above might look like the following:

<u>TIME</u>	<u>ACTIVITY</u>	<u>PHASE</u>
2-3 weeks prior	Description of program and invitation sent	Entry
10 days prior	Questionnaires sent to participants for self-report and subordinate report	Entry
7 days prior	Role assignments and pre-work packets sent	Entry
evening before	Cocktail party/business meeting contracting and introduction	Entry
Day 1	Looking Glass simulation and data collection	Experience
	Ventilation period	Reflection
	Divisional problem analysis	Reflection
	Homework	Reflection
Day 2	Data feedback and explanations	Reflection and conceptualization
Day 3	Interpretation and change strategies	Conceptualization
	Presentation of options	
Day 4	Training and skills practice	Skill development and practice

A program of this type, based on a model that emphasizes personal development, is not the only use for Looking Glass nor is it appropriate for all training objectives. Even when individual development is the primary objective, trainers will disagree about what models of learning are most efficacious. It is not our intention to do a lot of philosophizing about training. The issues involved in training interventions have been elaborated elsewhere (e.g., Argyris and Schoen, 1975) and debated in the literature for

some time. It seems that Looking Glass fits nicely with models emphasizing individual responsibility for learning, and the values embedded in such models feel good to us. We fully recognize that many organizations have some "party line" training (the equivalent of a university's core curriculum) that must be done, but we do not think that management development can reside ultimately anywhere but in the managers themselves.

The hypothetical program outlined above is clearly aimed at individual development. The training is focused on generating valid data, giving it to participants in understandable forms, helping participants draw inferences about what it means, and showing what kind of help the participants can get if they want to change. Because the program is diagnostic, the data collected are critically important. Looking Glass will generate them, but the training staff must find ways to measure them. Several such strategies are suggested in the research section of this report.

Miscellaneous Observations

The last three runs of Looking Glass included a one-day training program after the simulation. Conducting these sessions with staffs from the organizations involved, we learned a few things about the simulation's power, the kinds of reactions to expect, and the kinds of qualifications trainers should have.

Perhaps the most significant thing we learned is that Looking Glass is a powerful experience. When Looking Glass is coupled with peer and observer feedback to individuals and with an analysis of management decisions, participants may learn some disconcerting things about their management practices. Unlike many other training exercises, Looking Glass is based on realistic managerial challenges. A manager who finds out (s)he caused a division to mishandle its major problems is going to feel some pain. Participants who are currently dissatisfied with their careers or jobs or company may face up to these concerns as a result of Looking Glass. Fortunately, we always had people on hand who were professionally qualified to deal with such situations, and we were able to turn concern into a useful learning experience. The point, of course, is that this simulation is not a neutral or easily dismissed experience. The training staff must be prepared to help people deal with some fundamental issues, and must be available to provide individual

counseling if necessary. This is not a nicety or an optional extra. In each of the three runs, at least two managers needed staff help during the training session or at a later date. With one exception, the issues they were working on were job-related or connected with career pathing.

Because the simulation can be so powerful, participants should be volunteers and should know in advance what will happen during the training program. Further, the training staff should try to screen out potential participants who seem to be under unusual strain in their jobs or personal lives. Finally, qualified training staff should be available (i.e., not essential at every moment to the ongoing training activities) to participants if need arises. The staff should also be alert to participants showing stress during the simulation run. These people should be taken aside during a break period to find out what is going on.

We also suggest that the training staff review all feedback before it is returned to the participants. This will permit staff to anticipate who is going to get some bad news and to prepare strategies for turning the situation into a positive learning experience.

The possibility of an intense reaction by a few participants should not discourage trainers nor scare them away. Being effective is important to managers, and negative feedback will hurt. But the managerial job involves so many skills and activities that no one will receive all bad news. Some managers may, however, become so preoccupied with newly-seen shortcomings that they ignore the good things they did. The trainers should ensure that positives and negatives are put in proper context and help the participants see how they can improve those things that need improving. It is this high level of concern that makes real learning and change possible.

Another observation from our trial runs is that participants' behaviors during training after the simulation are valid data for learning. If helping people learn how to learn is a major objective in training, what people do during training is direct behavioral evidence of how effectively they are learning. It may be useful to stop the formal training process from time to time to have participants introspect on their here-and-now learning behavior. Peer ratings of how effectively people are using the feedback they have gotten might also be useful.

We've also noticed that almost every participant will have one or more "a-ha!" experiences during the simulation.

These are often forgotten as the simulation goes on, yet can be recovered if the right trigger is found during the debriefing. We, therefore, urge a strong anchoring of training points in actual materials and events from the simulation. This should start immediately after the simulation, preferably during divisional debriefs outlined on pages 112-113. Participants might also be asked to reflect on peak moments, writing down the things that stood out most during the simulation. We do not recommend that the simulation itself be interrupted for purposes of recording "a-ha's." This tends to get the participants out of role, thereby damaging the validity of their in-role managerial behavior. A much more effective strategy is to have participants go over the materials they generated during the simulation after it is over. This will serve as a useful prod to specific events and can be done without altering behavior during the action itself.

Looking Glass is not easy to debrief. Precisely because it preserves much of the complexity of managerial jobs, interpreting or even capturing individual behavior is difficult. We feel that the potential learning outcomes are well worth the extra effort required of the training staff.

Future Directions

We are currently working closely with several practitioners to develop some of the themes covered in this section and to turn them into practical training realities. We hope to collect data on how various strategies work and share both the designs and the results with the professional community. As various organizations begin using the simulation, the Center for Creative Leadership hopes to act as a clearinghouse for their experiences as well as a source for creating networks among researchers and practitioners with mutual interests.

Reference Notes

1. McCall, M. W., Jr., Morrison A. M., & Hannan, R. L. Studies of managerial work: Results and methods (Tech. Rep. No. 9). Greensboro, N.C.: Center for Creative Leadership, 1978.
2. McCall, M. W., Jr. Leadership as a design problem (Tech. Rep. No. 5). Greensboro, N.C.: Center for Creative Leadership, 1978.

References

- Argyris, C., & Schoen, D. A. Theory in practice: Increasing professional effectiveness. Washington: Jossey-Bass, 1975.
- Campbell, J. P. Personnel training and development. Annual Review of Psychology, 1971, 22, 565-602.
- Campbell, J. P., Dunnette, M. D., Lawler, E. E., III, & Weick, K. E., Jr. Managerial behavior, performance, and effectiveness. New York: McGraw-Hill, 1970.
- Kolb, D. A., Rubin, I. M., & McIntyre, J. M. Organizational psychology: An experiential approach. Englewood Cliffs, N.J.: Prentice-Hall, 1971.
- Stogdill, R. M. The handbook of leadership. New York: Free Press, 1974.
- Wanous, J. P. Organizational entry: The individual's viewpoint. In J. R. Hackman, E. E. Lawler, III, & L. W. Porter (Eds.), Perspectives on behavior in organizations. New York: McGraw-Hill, 1977.

IV. Administration

Administration

Administration of Looking Glass, in a larger sense, includes all aspects of the research or training program in which the simulation is embedded. As was pointed out in Sections II and III, however, Looking Glass has a variety of uses, and it would be impossible to detail here all the administrative combinations and permutations involved. Instead, this section will focus on the step-by-step administration of the simulation itself without training or research additions.

As we said earlier, Looking Glass can be viewed as a standardized stimulus for producing managerial behavior in a realistic organizational context. This section is designed to maintain that standardization regarding administration. Certainly both simulation content and administrative procedures will evolve over the next few years, and it is important that these changes, particularly as they impact on the integrity of the simulation, be carefully controlled and documented. Potential users should plan to contact a member of the development team at the Center for Creative Leadership¹ prior to building a program around Looking Glass. The actual simulation materials, contained in Volumes II, III, IV, V, and VI of this series, are not available without such a contact. Briefings on the simulation and/or entrée to actual runs can be arranged for interested potential users.

After describing the basic materials required to run Looking Glass, this section progresses sequentially, through the preliminary activities, the setup, the introduction, the run itself, and the closing-up of the simulation. Liberal use has been made of appendices containing sample forms, outlines, lists, diagrams, etc. The following outline may help the user find particular parts of the section:

¹ Michael Lombardo, Morgan McCall, or David DeVries, Center for Creative Leadership, P. O. Box P-1, Greensboro, N.C. 27402.

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Elements Required to Run the Simulation

Running Looking Glass requires the following elements:

- A staff to run the simulation, consisting of a minimum of two people and additional personnel as dictated by the research and training needs;
- A group of participants;
- Actual simulation materials, consisting of prework packets for each role and the in-basket materials;
- A site adequate to provide a separate work area for each participant, a conference area, a staff area, and rooms for debriefing/training;
- Assorted paraphernalia for each desk, including pens, note pads, in-basket, memo paper, etc.;
- A communication system (telephone or intercom) permitting each participant to call every other participant and to contact staff. ghosts (optional, but highly recommended);
- A set of Manuals:

Volume I: Looking Glass, Inc.: An
Organizational Simulation
Volume II: The Advanced Products Division
Volume III: The Commercial Glass Division
Volume IV: The Industrial Glass Division
Volume V: Controller's Manual
Volume VI: Problem Lists

Phase I: Preliminaries

I-A. Choosing a staff

If no telephone system is used and no systematic observation is planned, Looking Glass can be run by two people. Between them, they must: (1) handle mail pickup and delivery, (2) respond to requests for additional information, and (3) circulate enough to identify participants with potential need for special counseling. We do not recommend a staff of two, particularly if a meaningful debriefing is planned. If a manual telephone system is used, a minimum staff of three is required (since one person will be tied up with the phones).

The recommended staff is five:

- A head administrator to coordinate mail delivery, answer requests, fill in for observers, and handle unexpected events;
- A telephone operator to monitor and record calls and to take information requests for staff;
- One observer per division.

All staff should be familiar with the content of the simulation. The head administrator and the telephone operator should be familiar with all three divisions so they can make sense of information requests and provide the information requested. It is useful for all observers to be familiar with all three divisions, but they should be intimately familiar with the materials for the division they are observing. It is suggested that all staff participate in (or at least observe) the simulation at least once prior to running it.

Observers, of course, should be trusted by the participants and thoroughly trained. The nature of that training would be determined by research or training objectives. Because Looking Glass is a free simulation, observers will have difficulty following the action if they are not familiar with the materials for the division they are observing.

Additional observers can be used, but we recommend no more than three per division. The presence of more than that can cause serious participant distraction.

At least one staff member must be qualified to provide individual counseling should it be necessary. There should

be enough slack in staff assignments to free this person should a participant require immediate attention. Our prior experience indicates that participant problems emerge after the simulation, but there are clear signs during the run. All observers should be sensitive to anyone exhibiting stress and should forewarn the counselor(s).

I-B. Selecting and assigning participants

Choice of participants is determined primarily by research or training objectives. Looking Glass is designed to run with 20 participants, and no live role is easily omitted. Given the inevitability of last-minute cancellations, we suggest finding an additional one or two people to serve as backups. These people should be ready to participate on a moment's notice.

The power of the simulation dictates two restrictions on choice of participants. First, participation should be voluntary, and a complete description of the overall program and its purpose should be given to all candidates. The description should also include: (1) what will be done with the data, (2) who will be serving on the staff, (3) whether participants' superiors or subordinates will be involved, (4) whom to contact for further information, (5) a statement that no penalty is attached to non-participation, (6) a warning that the experience can be stressful, and (7) what participants can expect to gain from being in the program.

Second, the staff should make every effort to screen out potential participants who are having serious personal or work problems. This can be accomplished through personal interviews and by contacting participants' superiors.

Assignment of participants to roles is a function of research or training goals (see Sections II and III). We typically preserve relative hierarchical status, as in the back-home organization, by assigning more senior executives to the more senior positions in Looking Glass. The roles of the President, the Vice-Presidents, and the Directors of Manufacturing are the most demanding.

I-C. Choosing a site

There are three basic requirements for a site for the simulation: (1) It should be totally removed from interruptions connected with participants' real jobs, (2) it should

be adequate to provide a separate work area for each participant, and (3) there should be space for observers and staff.

The key to an effective physical layout is psychological space. Each participant should feel that he or she has a private work area. We have successfully used temporary dividers strategically placed in large rooms. We do not recommend using private offices since participants tend to close the doors to observers.

In addition to 20 separate desks or tables, there should be a conference area available to participants on a first-come, first-served basis (equipped with a flip chart) and an area for staff (where they can operate the switchboard, respond to information requests, handle mail, record observations, etc.). It is an advantage if the site provides easy access to lunch facilities.

Appendix A contains two floor plans we have used successfully in earlier runs. Training and debriefing needs can be met by using one large room for whole-company discussions and three smaller rooms for divisional meetings. One very large meeting room would be adequate if it could be sectioned off. The rooms in which the simulation is run can serve debriefing purposes as well.

I-D. Preparing and sending prework packets

At least one week before the simulation, participants should receive the prework materials described in Appendix B (the memo code numbers listed refer to the materials as they appear in Volumes II-IV). These materials give participants some basic information about the company and its products and some specific information about their particular roles. These packets cannot be sent until participants have agreed to participate in the program and have been assigned to a particular role (qualified users can obtain a master of all prework material and a prework checklist from the Center for Creative Leadership).

I-E. Assembling in-basket materials

The in-basket materials are the core of Looking Glass and contain all the information participants will have when the simulation starts. The contents of the in-baskets,

averaging about 35 items for each of the 20 roles, are memos and letters on a variety of subjects. Each piece has number and letter codes for administrative use (see Appendix C). Each in-basket includes memos/letters sent to the position and copies of memos sent from that position. All of the materials in the in-basket are color-coded for easy identification. Materials originating from the Corporate Offices, the Office of the President, or outside Looking Glass are printed on white paper; materials originating from within the Commercial Glass Division on green paper; from within the Industrial Glass Division on blue paper; and from within the Advanced Products Division on yellow paper. The color-coding facilitates mail delivery and sorting of the materials for research or training uses.

Qualified users can obtain a Master Set of all in-basket materials from the Center for Creative Leadership. Appendix C contains samples of in-basket items, complete instructions for reproducing the Master Set, and an abbreviated example of the By-Position Master Checklist.

All in-basket materials for each division, arranged by code number and category, are in Volumes II, III, and IV of this series. Each staff member will want appropriate volumes for reference.

Phase II: Setup

II-A. Scheduling

Looking Glass is designed to run for six continuous hours (but can be lengthened by half an hour without seriously affecting outcomes). It should not be broken into segments spread across several days. Introducing the simulation requires an additional hour (unless the introduction begins the night before; see Phase III: Introduction and Start-up).

Scheduling is important because some meetings, such as those between Plant Managers and their superiors and the President's Address, are prescheduled on the simulation materials (see Appendix D for these memo numbers).

A suggested schedule for a run of Looking Glass is printed below:

8:00	Introduction
9:00	Simulation begins
9:45	Switchboard opens
10:00	First mail pickup
11:15	Second mail pickup
12:00-1:00	Lunch
1:15	Third mail pickup
2:15	Fourth mail pickup
3:00	President's Address and question/answer period
3:30	Simulation ends; question- naires distributed
4:30	Debriefing begins

The introduction is discussed at length under Phase III (see pp. 134-140). From 9:00 to 9:45 the participants are urged to work at their desks, reading and organizing their in-baskets. When a manual phone system is used, it does not operate during this period so participants will not be interrupted by premature calls. Mail pickups (followed by mail deliveries as quickly as sorting is done) are scheduled for 10:00, 11:15, 1:15, and 2:15. The exact timing of these activities is not critical, as long as memos are picked up and delivered frequently.

Lunch during the simulation, as it is in real organizations, is not a separate event. The organization goes on during that period, and participants may choose to meet over lunch, eat at a different time, etc. They are told that lunch will be available on-site between certain times and are left to their own devices. The ideal site will have a lunch room conveniently located. It is best to avoid sites where participants will have to leave the premises for lunch.

The President's Address is the last event of the simulation and is scheduled at the end of six running hours. It is supposed to last 15 minutes, but if there are many questions after the talk, an additional 15 minutes may be needed.

The period immediately following the President's Address is devoted to collecting paper-and-pencil data for research and/or training purposes. These data should be collected from the participants while events are still fresh in their minds and before they are discussed with others. The amount of time required will depend on the number and complexity of the instruments used. We recommend that it be limited to an hour or less.

After the questionnaires are completed, the debriefing can begin. As mentioned in Section III of this manual, we strongly suggest starting with an unstructured discussion in divisional groups to let participants air their feelings and reactions.

The schedule outlined here can be adjusted easily to fit with practical constraints on start, lunch, and stopping times. Once the basic schedule is established, remember to enter the correct times on copies of the memos listed in Appendix D.

II-B. Office supplies and desk setup

Part of preserving reality in a simulation is to keep things familiar. The individual desks in Looking Glass are made somewhat realistic through office accoutrements, including in-baskets, pens, paper, blotters, ashtrays, paper clips, desk plates, and so forth. A diagram of a typical Looking Glass desk can be found in Appendix E, along with a complete list of the items we have used in the past. Samples of the format of Looking Glass NCR paper and routing slips are included also.

We have tried to create some status differences by manipulating accoutrements. Higher level executives have fancier pen sets, ashtrays, blotters, etc., than do lower level executives. If the site permits, we also place higher status offices in nicer locations, taking advantage of windows, carpets, and the like. In one run, for example, the top executive suite was set up in the one room with a fireplace, exposed beams, and carpeting. The rest of the executives were assigned to traditional classrooms.

All in-basket materials (memos sent to the position and the folder containing memos sent from the position) should be placed in the "IN" tray of the in-basket.

Position titles should be affixed to office partitions so that visitors can identify office incumbents. A floor plan should be drawn up indicating where the various executives are located and their telephone numbers (if a phone system is used). This diagram should be distributed during the introduction.

II-C. The telephone system

The telephone is a very important part of a manager's life, and we highly recommend use of a phone system with the simulation. This is not essential, but it creates an air of reality and is a very useful way for participants to contact the outside world and ghost roles.

The phone system we have used is an ancient, manually-operated switchboard connecting 20 standard telephones. The operator depresses switches to connect parties, takes information requests, and logs calls. Automatic recording devices tape each conversation. Conference calls can be arranged. This system cost us about \$1,000.00 and has yielded maximum flexibility in terms of data recording. Further information on construction of such a system can be obtained from Center staff.

Setting up this phone system takes two people about three hours. Wires must be laid out (and taped down to prevent accidents) and all circuits must be tested. Each participant is assigned a phone number which is printed on the organization chart and on the floor plan.

Phase III: Introduction and Start-up

The introduction is a critical transition period. It is during this time that managers begin moving from their real-world jobs into executive positions at Looking Glass. The importance of this entry phase has been emphasized by our early runs, and we now recommend beginning the introduction during an informal session the night before the simulation starts (see Section III, p. 111). Since we have not yet tried this format, the procedures used to introduce Looking Glass on the morning of a run will be described here. Those aspects that would be covered in an evening session are marked with an asterisk (*). A summary outline of the introduction, as we have used it in the past, can be found in Appendix F.

III-A. Welcome*

As participants arrive, they should be given both a name tag and a position tag to wear. It is important that they begin immediately to associate each other with their roles in Looking Glass, so these tags should be worn throughout the simulation. (It is wise to prepare a duplicate set of position tags, as some are invariably lost or forgotten.)

When all participants have arrived, an official welcome should be given by a well-known and respected organizational figure. If this person has been through the simulation previously, his or her remarks will further enhance participant involvement with the program.

III-B. Introductions*

All staff members, their organization affiliations, and their roles during the program should be introduced. Any outsiders present (and their reasons for being there) should be introduced at this time. Then the participants should introduce themselves, describing both their current jobs and their jobs at Looking Glass.

III-C. Linkages*

Participants should be informed about the program's origin, why they were chosen to participate, and how they were assigned to roles.

III-D. Objectives*

1. Overview

The overall program outline should be summarized (and/or handed out) and the schedule for the day reviewed. Do not give a lot of details on the simulation schedule; simply say, "The simulation will end at about _____, then we will" Be sure to let them know when they will adjourn.

2. Brief History of the Simulation

The participants should be informed in general terms that the simulation is based on real events and that the challenges facing them as managers are typical. They should respond as they would back on the job.

Emphasis should be placed on the fact that:

(1) there are no tricks intended, (2) no one has been assigned to disrupt, (3) we are not "setting them up," (4) the simulation is a day in the life of the corporation, and (5) the participants are the top management team.

3. Observers and Feedback

The nature of the data to be collected by observers should be explained in general terms. Particular emphasis should be placed on how the data are going to be used. Issues of confidentiality should be placed up front.

It should be made explicit that observers "do not exist." They cannot answer questions. Participants should do their best to ignore the observers, and the observers will try to stay out of the way.

Finally, participants should be given some idea of what feedback they will receive. Detail is

not required, but participants should have a feeling for what they stand to gain by taking the program seriously.

4. Goals

Participants and observers have slightly different goals. Participants should strive to behave as they normally would as managers in an organization. Observers will try to record what happens so it can be looked at later on. All are hoping to learn from the experience.

III-E. Looking Glass, Inc.*

Even though the prework packets contain extensive background information, the company should be described during the introduction. It should be pointed out that Looking Glass is a major glass company with sales of about \$200 million. The history of the company (see memo CORP-1) should also be summarized.

By showing an overhead of the organization chart, it is easy to review the three divisions, their product lines, and the positions the participants occupy. Point out that other positions in the company not shown on the chart can be reached by memo or phone.

Close this part of the introduction by reminding the participants that the Plant Manager of Glass Piping has resigned and that the Director of Manufacturing in IGD is temporarily in charge of that plant. Also point out that the remaining Plant Managers from all divisions are at corporate headquarters (in the city in which the simulation is being run) for the day on their routine, bi-monthly visit (this point should be stressed because the plants are geographically spread and participants sometimes think the Plant Managers are not physically present). They have brought materials from their back-home in-baskets with them to Corporate. Also, emphasize that all positions are executive level. Plant Managers, for example, make \$40-70,000 a year and are in charge of multimillion dollar manufacturing operations.

The overview of the company should not cover any of the problems in the company, its financial condition, or other information contained in the in-baskets. Its purpose is simply to ensure that all participants are familiar with

basic corporate products and the organization chart. Questions should not be encouraged, and those going beyond information in the prework materials should be avoided (e.g., "I think that will be clear after we get started.").

III-F. Procedures

This part of the introduction describes in detail how things work in Looking Glass. Props will be extremely useful, and we suggest gathering the following items for demonstration purposes: a sample of the handout of the floor plan, showing the locations of the offices (with phone numbers), the conference area, restrooms, drinking facilities, classrooms, etc.; samples of NCR memo paper, in all four colors; samples of routing slips; a sample of the Procedures handout (see Appendix H). (This should be handed out at the beginning of the procedures discussion so participants can take notes.)

1. Before explaining procedures, be sure to verify that participants are wearing both a name and a title tag. Remind them that they should wear these tags throughout the day.
2. Offices

Explain that each participant has an office and hand out the floor plan. Point out that each desk contains the usual items, including memo paper, an in-basket, message pads, paper clips, routing slips, etc.

On their desks, participants will find in-baskets containing today's mail. This includes memos and letters to them, as well as copies of things they have sent to other participants. Things sent to other roles will have arrived already this morning.

The switchboard (or the office, if there is no manually-operated phone system) will not open for 45 minutes (from the scheduled start of the simulation). Explain that the managers have come in early and should use that quiet time to familiarize themselves with the in-baskets.

Participants are free to write on any of the materials.

3. Using the Telephone

If a telephone or intercom system is used, participants should have it explained fully to them. Mention that the phone will be closed during the designated lunch hour (if it is manually operated).

4. Using the Mail System

A lot of staff headaches will be saved if mail procedures are explained as clearly as possible. First, be sure everyone knows how NCR paper works. Urge them not to make more copies than they need and to use a ballpoint pen. The more copies, the harder one should press down when writing.

Second, point out that efficient mail delivery depends on legible and precise addressing. The title of the role, not the participant's name, should be used. Because each division has the same managerial positions, the division initials (APD, CGD, IGD) should always appear after the position title. Mail can be sent to people not on the organization chart, but again, the title and location should be clearly stated. Incorrectly addressed mail will be returned.

For participants' convenience, routing slips can be used for all positions on the chart. Simply check the title of the person to whom the memo goes. Be sure to attach a routing slip to each copy. Ask participants to keep a copy in their own file, since they may need to refer to a memo later on.

Mail is picked up four times during the simulation. Participants should have their outgoing mail in their out-baskets by the times you have scheduled. Be sure to tell them the times, even though they are repeated on the Procedures handout (Appendix H).

5. Contacting Outsiders

People not on the organization chart, either inside or outside the corporation, can be contacted by memo or directly by phone (if there is a phone system). If contact is by

phone, a message should be left with the operator who will then relay it to the appropriate person. In some cases, of course, the person called may not be available today.

6. Conference Area

A conference area is reserved for participants' use on a first-come, first-served basis. It should be pointed out where it is on the floor plan.

7. Lunch

The business of the company goes on during lunch. Participants should be told when lunch will be served and where. They are free to go anytime during that time, just as they would on a normal business day. The switchboard (if manual) is closed for a 45-minute period during lunch (specify times).

8. Amenities

Whatever amenities are available at the site should be described. These might include coffee, soft drinks, restrooms, water fountains, snacks. As in any typical day, participants are free to avail themselves of these amenities whenever they like.

Ask if there are any questions about procedures.

III-G. Summary

The summary should refocus participants on their main task: to manage Looking Glass.

Other major points can be reviewed. We recommend reminding them: (1) to keep their title tags on throughout the day, (2) that the company does not officially open for another 45 minutes, and (3) that the simulation will conclude with an address by the President (tell them when and where). Ask them to leave all materials at their desks when they leave for the address.

As a final comment, point out that the staff will not intervene and that there are no tricks. They are to manage the company as they see fit.

We recommend that whoever is handling the introduction study it carefully and change any parts that don't fit the particular site or circumstances. The presentation should be practiced beforehand to determine how long it takes and to develop a relaxed presentation style. There is often some tension in the air, and the presenter should try to be calm, congenial, and supportive. Do not imply that they are going to fail!

Once the presentation is completed and fair-game questions answered, participants go to their "offices" to begin work.

Phase IV: The Run Itself

Once everything has been set up and the introduction has been completed, Looking Glass runs without further staff intervention. During the run, the staff has to make whatever observations are dictated by the training or research design, pick up and deliver the mail, handle the telephone system, and respond, either in writing or by phone, to requests from the participants for information.

IV-A. Observer conduct

However observation has been structured, observers should remain as unobtrusive as possible. As tempting as it might be, observers should avoid peering over a participant's shoulders to see what is being read or written, rummaging around on a participant's desk, making distracting noises, laughing, or starting conversations with other observers or with the participants. If observers want to discuss something, they should go where the conversation will not distract participants.

The first 45 minutes or more of the simulation will usually be quite slow. Participants will sit at their desks, working through in-basket materials. This is an excellent time for observers to walk around, memorize who is in what role and where the work areas are, and find the least obtrusive vantage points for observations later on. If systematic observation is part of the program, we recommend laying out the offices so that observers have inconspicuous places to sit. We have done this by placing chairs behind divider screens and at strategic points where an observer could watch several desks at once.

While we suggest that observers remain as unobtrusive as possible, they should not skulk around. All observers should have been introduced beforehand and the purpose of their observations explained. Participants will quickly become accustomed to their presence if the observers act discreetly and professionally. If they act like a group of secret service agents, the results can be as distracting as excessive obtrusiveness.

IV-B. Mail delivery

Mail is picked up and delivered four times during a simulation run, twice in the morning and twice after lunch. In the past, the number of memos written by all 20 participants has ranged from 27 to 57 per hour. This means that there is likely to be, at least at certain times, a large volume of material to sort out. Particular research or training objectives may require some additional record keeping as well. Efficiency, then, becomes important, and our experience suggests the following strategy.

If observers are assigned to each division, have them collect the mail for their division at the prearranged times and deliver it to a staff table. If the observation schedule does not require them to return right away, they can sort the mail for their own division and deliver it themselves. This can be quite informative, since a lot of activity is documented in the memos. More likely, the run will have few observers, and the administrator will prefer to have one staff member designated to handle the mail.

All mail should be screened before sorting to check addresses. Sometimes participants forget to check off titles under "copies to," and the sorter can do this if the memos are still together. Inadequately addressed mail should be returned to the sender at the next mail delivery. (Don't be too picky on this, as the addressee can usually be figured out--in real organizations mail sometimes gets delivered to the wrong person, so a few mistakes won't detract from the realism.)

Once mail from the divisions has been screened, it should be sorted into one of four categories. (Note: Most mail from a division will go to someone else within the same division. Memo paper has been color-coded, and each division should be sorted separately.) The categories are: (1) mail to people in live simulation roles in the same division as the sender, (2) mail to people in live roles but outside of the sender's division, (3) mail to non-live roles or to outsiders (i.e., that cannot be delivered) that requires no response (e.g., acknowledging an appointment, accepting a nomination, etc.), and (4) mail to non-live roles or outsiders that requires a response from a staff member.

The first priority is to deliver mail in Categories 1 and 2, pieces going to live roles. The mail sorter should record any information needed for training or research purposes, then deliver the mail. It will, of course, go much faster if deliverable mail to the same person is stacked

together and if the stacks are placed in the same sequence as the desk locations. Mail should be delivered to the participants' "IN" boxes.

The second priority, after all live-role mail is sorted, recorded, and delivered, is to examine mail that requires a staff response (Category 4). It usually takes the form of requests for additional information addressed to nonexistent corporate staff, non-live subordinates, or outsiders. Procedures for responding to these requests will be explained in the next part of this section (IV-C).

Last, Category 3 mail (not deliverable and requiring no response) should be put in a folder labeled with the sender's position title. After it has been responded to, Category 4 mail (not deliverable but requiring a staff response) will also be put in these folders (along with a copy of the response from the staff member). Should future inquiries refer to previous memos or should participants want to retrieve memos they have previously sent, these files will make finding them easy. (Note: A staff member should always retrieve memos--participants should not be allowed to peruse the files during a run.)

Sometimes participants will ask to photocopy something they want to attach to a memo. We generally do not have ready access to a copy machine, nor do we want to waste staff time on such activities. We suggest that the participant making such a request be told that the copy machine is out of order. This is a relatively common phenomenon, particularly in our own organization, so it fits with reality.

IV-C. Information requests and responses

Participants' requests for additional information have varied in number from virtually none to practically overwhelming. We are currently developing a controller's manual containing the information most frequently requested. Until that volume is available, the staff member most familiar with Looking Glass will have to respond as best (s)he can.

The largest single type of information requested in past runs has been financial. Often the answer is easily extrapolated from already-existing financial data, all of which are contained in Volumes II, III, and IV of this series. Nonetheless, a staff member with some financial training or someone who has paid close attention to this information can be useful for answering such requests.

There are several general guidelines for responding to information requests. First, the information given should be accurate, or at least plausible. If you don't have the foggiest idea of how to answer, avoid answering. Remember, Looking Glass is only a day in the life of the corporation. The responses might be that the information will take several days to put together, that the person who knows is on vacation this week, that the computer fouled up or the data disc has been misplaced, etc. Again, try to make any excuses realistic and consistent. Don't tell a participant that the controller is on vacation, then turn around and answer another request in the role of controller.

Second, all responses should be in-role. Participants will address mail to or call a specific person, be that person a ghost subordinate, a Looking Glass staff member, or an outsider. Usually the request will be with reference to a memo (or memos). The staff member responding should assume the role of the appropriate ghost. How would this person reply? By phone or by memo? Quickly or slowly? Precisely or evasively? Consider, for example, the relationship between the ghost and the participant requesting information. A ghost subordinate is likely to respond differently than a ghost peer.

Third, responses should not create a crisis. It will be a temptation at times to tell a Plant Manager that the plant just burned to the ground, or that the hourly employees just went on stike. Don't do it unless the appearance of a crisis is designed specifically as a research or training intervention. Participants were promised there would be no tricks. In addition, a crisis will change their behavior in ways that will affect any research or training data being collected. So, resist temptations to jazz up the simulation.

Fourth, don't deliberately mislead participants. Try to answer their questions as clearly and directly as possible. If the question is unclear, feel free to respond with a request for clarification rather than by introducing information that may be incorrect. For instance, the Director of Manufacturing, CGD, might ask how much soda ash is used each day. It will make a big difference if the answer you give is a divisional total or a plant total. Rather than risk misleading, you might ask the Director which he wants, or give both clearly identified. As a general rule, do not volunteer information that was not specifically requested.

Fifth, give priority to information requests that (1) are pertinent to important problems in the simulation, and (2) ask for information that is not already in the

simulation. This is obviously a judgment call, requiring intimate familiarity with simulation content.

The administrative role of answering information requests can be a great deal of fun. Remember that the simulation represents only a day, although a very busy one. Don't get frustrated or pressured if the action is hot and heavy. In the most efficient of organizations, responding to information requests takes time. If you don't get around to all of them, that's reality.

We do suggest that records be kept of the kinds of information requested and the responses given. Over time, these records will supplement the manual we are producing, and repeated requests eventually might be incorporated into the simulation materials. In addition, the requests indicate what the participants' priorities are and whether they are spending time with the important problems. They also indicate whether or not available information is being communicated. These data are extremely valuable in training and research contexts. We hope that users will share these records with us.

IV-D. Lunch

Lunch for participants is open-ended. Most will go out in small groups, continuing work-related discussions. Some will eat at their desks, others may skip lunch altogether. This can create problems for the staff if observations are to be continued through the lunch period.

We have found that staff may prefer to arrange for sandwiches to be brought in rather than try to go out. This permits them to share information on how things are going and eases the logistics if some observation during lunch has been scheduled (observers can easily share the burden by alternating eating and watching). If there is a manually-operated switchboard, it should be closed during the scheduled lunch break, freeing the operator to recover or to help with observation.

Participants straggle back from lunch at their own pace. Some lunch meetings will continue into the afternoon. The period immediately following lunch break is usually a bit slower than the morning pace--the staff need not be alarmed. Energy should pick up again later in the afternoon.

IV-E. The President's Address

The last activity during the simulation is the address by the President. The staff need not intervene, since all participants have received a memo announcing the address and its time (the location will have been announced during the introduction). Observers will want to take notes during this address, since the President will discuss what he or she thought were the major issues confronting the company. The questions asked after the address can be quite revealing of participants' perceptions and reactions. This scheduled event is usually worth videotaping.

IV-F. Telephones

If the simulation is run with a manual switchboard like the one used by the Center for Creative Leadership, the operator deserves special consideration. At least one other staff member should be trained in telephone operation, and the operator should be relieved at regular intervals. While the number of completed calls ranges from 11 to 18 per hour, the number of calls attempted is probably double that. Somehow, calls seem to come in bursts, thereby overloading the operator at certain times and boring him or her to death at others. We recommend that the operator develop a neutral style, being efficient rather than conversational.

Messages for participants not at their desks can be taken but should not be encouraged. (Say, "Sorry, no one answers," rather than "No one answers; can I take a message?") Calls to non-live roles and to outsiders are channeled through the operator, who should take a detailed message and pass it on to the staff member in charge of responding to information requests. (The operator should have a supply of standard office message pads for this purpose.) The operator is also responsible for logging each call on the telephone record (see Appendix G).

Phase V: Closing Up

After the President's Address and the following question/answer period, the simulation is over. At this time, all the participants are in one room. Before they disperse or discussion starts, they should fill out any appropriate paper-and-pencil measures. Only then should they, as a group, be allowed to ventilate.

V-A. Data collection

Immediately after the President's Address is the time to collect individual data, while the experience is still fresh and not influenced by the reactions of other participants. The types of questionnaires used depends on the research or training issues (see Sections II and III of this volume). We have successfully used questionnaires about power, climate, and decision making, as well as instruments aimed at describing peer behavior. Participants are usually anxious to talk about the experience, so this time should be kept as short as possible (certainly no more than an hour).

V-B. Ventilation period and transition

Immediately after data collection (and a short break, if desired), the staff should lead an open, unstructured discussion. Usually, "Well, what did you think?" is sufficient to launch the group into their reactions to the simulation. The staff should be nondefensive, asking frequently if others felt the same way. This is not a time to get into training issues but simply a chance for participants to share their feelings about the simulation. This session usually lasts about half an hour and seems to be very important prior to any further debriefing. (See Section III, pp. 112-113, for more on this.)

While participants are filling out questionnaires and ventilating, a staff member should collect all materials from the Looking Glass desks. All memos and work paper should be put in the folder labeled "Copies of Memos You Sent" and saved for the training segments or for later analysis as part of the research effort.

The observers should use this time to write up their observations, fill out forms, or otherwise conclude the data collection process.

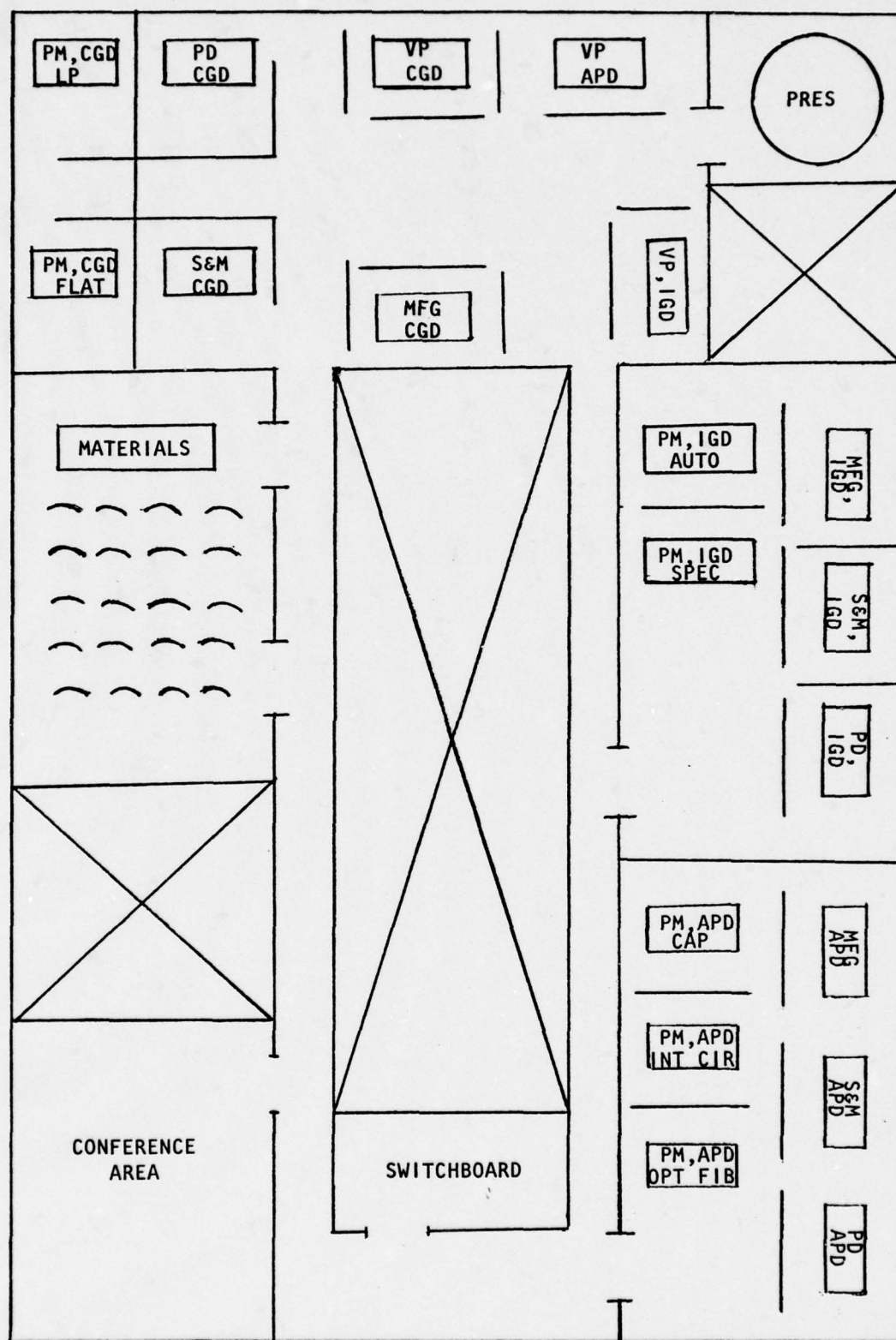
(Appendix I contains a master checklist summarizing the process discussed in this section. The program administrator may find it useful as a review of procedures.)

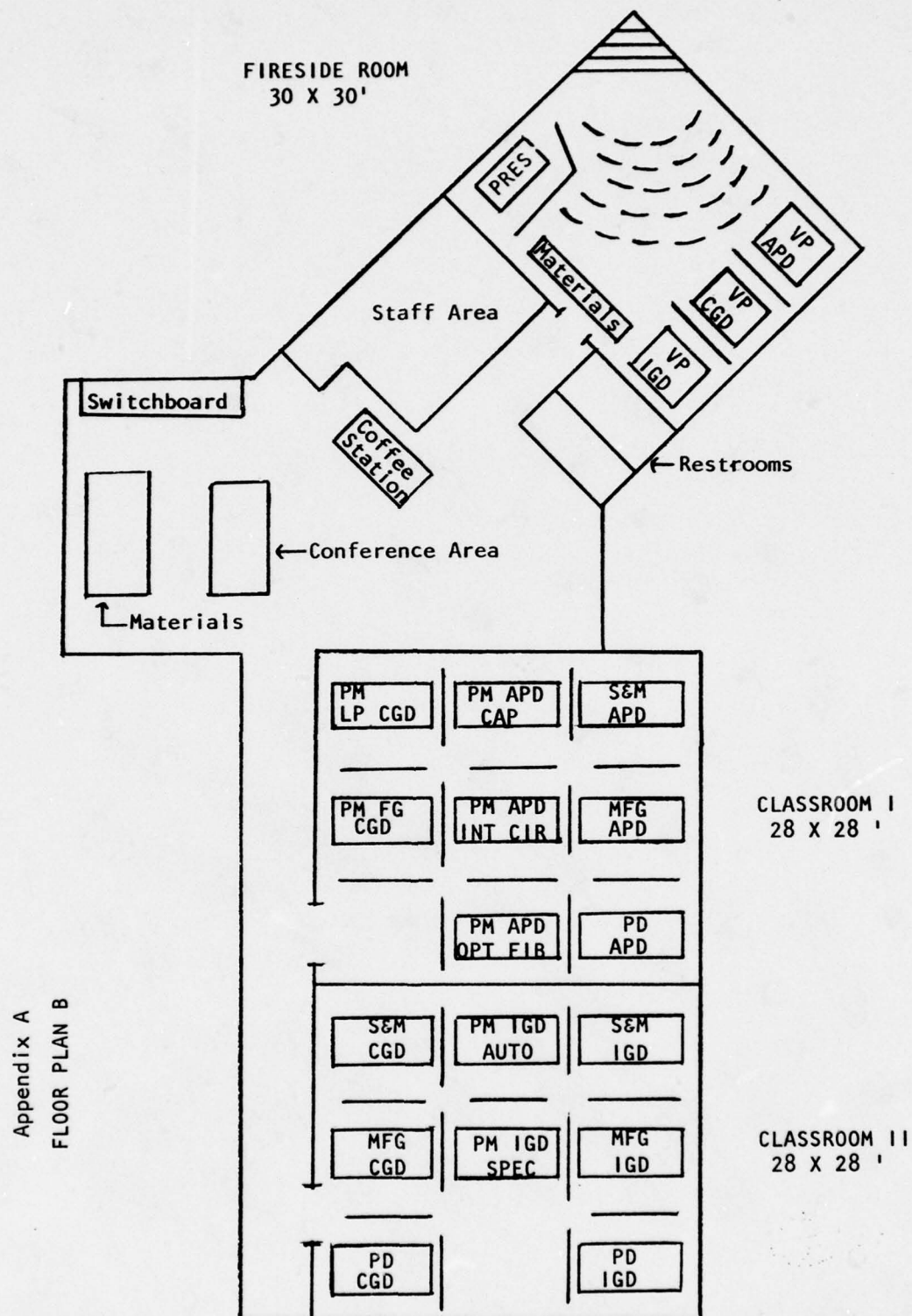
Appendix A

FLOOR PLANS

Appendix A

FLOOR PLAN A





Appendix B
PREWORK MATERIALS

Appendix B
PREWORK MATERIALS

<u>MEMO CODE NUMBER</u>	<u>ROLE THAT RECEIVES MATERIAL</u>	<u>DESCRIPTION</u>
CORP-2	ALL	Organization Chart
CORP-1	ALL	History of Looking Glass
PRE-3A to 3H	ALL	Executive Job Descriptions (General) (Included in this appendix)
CORP-33	ALL	Press Release - Flat Glass and Lighting Products Plants
CORP-49	ALL	Press Release - Auto Glass, Specialty Glass, and Glass Piping Plants
CORP-9	ALL	Press Release - Capacitor, Optical Fiber, and Integrated Circuit Plants
CORP-4	PRESIDENT	Job Description (Specific)
CORP-11B	VP, APD	Job Description (Specific)
CORP-11C	DIR-MFG, APD	Job Description (Specific)
CORP-11D	DIR-S&M, APD	Job Description (Specific)
CORP-11E	DIR-PD, APD	Job Description (Specific)
CORP-11F	PM-OPT FIBERS	Job Description (Specific)
CORP-11G	PM-CAPACITORS	Job Description (Specific)
CORP-11H	PM-INT CIRCUITS	Job Description (Specific)
CORP-51B	VP, IGD	Job Description (Specific)
CORP-51C	DIR-MFG, IGD	Job Description (Specific)
CORP-51E	DIR-S&M, IGD	Job Description (Specific)

Appendix B (cont.)

PREWORK MATERIALS

<u>MEMO CODE NUMBER</u>	<u>ROLE THAT RECEIVES MATERIAL</u>	<u>DESCRIPTION</u>
CORP-51D	DIR-PD, IGD	Job Description (Specific)
CORP-51F	PM-AUTO	Job Description (Specific)
CORP-51G	PM-SPECIALTY	Job Description (Specific)
CGD-1	VP, CGD	Job Description (Specific)
CGD-2	DIR-MFG, CGD	Job Description (Specific)
CGD-3	DIR-S&M, CGD	Job Description (Specific)
CGD-4	DIR-PD, CGD	Job Description (Specific)
CGD-5	PM-FLAT	Job Description (Specific)
CGD-6	PM-LIGHTING	Job Description (Specific)
CORP-19	PM-CAPACITORS PM-OPT FIBERS PM-INT CIRCUITS	APD Plant Organization Chart
CORP-58	PM-AUTO PM-SPECIALTY	IGD Plant Organization Chart
CORP-36	PM-FLAT	Flat Glass Plant Organization Chart and Floor Plan
CORP-37	PM-LIGHTING	Lighting Products Plant Organi- zation Chart and Floor Plan

LOOKING GLASS

Corporate Offices

155

To: All Looking Glass Executives

From: Corporate Personnel

Re: Executive Job Descriptions

Copies to:

For your information, I have attached the general job descriptions for Looking Glass executive positions. These jobs vary slightly, depending on the specific division, product, etc. More detailed descriptions are available and have been distributed to each position.

Also attached is a simplified description of the divisions and plants of the corporation.

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W-20

PRE-3A

LOOKING GLASS, INC.
EXECUTIVE JOB DESCRIPTIONS

PRESIDENT

RESPONSIBILITIES:

- overall management of Looking Glass
- all major financial decisions affecting the corporation
- hiring and firing of Looking Glass executives
- presiding over the Management Committee (consisting of all division Vice-Presidents and the President, this committee makes decisions on matters affecting more than one division)

RESPONSIBLE TO:

Chairman of the Board, Looking Glass, Inc.

DIRECT REPORTS:

Vice-President, Commercial Glass Division

Vice-President, Industrial Glass Division

Vice-President, Advanced Products Division

SALARY RANGE:

\$130,000 - \$200,000

VICE-PRESIDENT (Division)

RESPONSIBILITIES:

- overall management of sales, marketing, production, and product development within a division of Looking Glass
- operational responsibility for all financial, legal, and governmental matters affecting the division
- serving on the Management Committee
- hiring and firing of division executives

RESPONSIBLE TO:

President, Looking Glass, Inc.

DIRECT REPORTS:

Director of Manufacturing

Director of Sales and Marketing

Director of Product Development

SALARY RANGE:

\$90,000 - \$125,000

DIRECTOR OF MANUFACTURING (Division)**RESPONSIBILITIES:**

- overall management of production operations within a division of Looking Glass, Inc.
- implementing all corporate decisions regarding the manufacture of products within the division
- all financial, legal, governmental and personnel matters within the manufacturing arm of the division
- coordinating production with sales and marketing and product development
- meeting at least every two months with division plant managers

RESPONSIBLE TO:

Vice-President of Division

DIRECT REPORTS:

Plant Managers of Division (number varies by division)

SALARY RANGE:

\$65,000 - \$90,000

DIRECTOR OF SALES AND MARKETING (Division)

RESPONSIBILITIES:

- overall management for both the sales and the marketing functions of the division
- maintaining and generating new sales for existing product lines
- assessing market needs and potentials for both existing and new products
- coordinating sales and marketing with manufacturing and product development
- managing all internal sales of products to other divisions
- all financial, legal, governmental, and personnel matters affecting the sales and marketing part of the division

RESPONSIBLE TO:

Vice-President of Division

DIRECT REPORTS:

Regional or District Sales Managers

Marketing Manager

Sales and/or Marketing Staff Positions
(the number of direct reports will vary by division)

SALARY RANGE:

\$65,000 - \$90,000

DIRECTOR OF PRODUCT DEVELOPMENT (Division)

RESPONSIBILITIES:

- overall management for all phases of product development within the division
- design, modification, and improvement of machines and technologies used for producing glass products in the division
- assessing the feasibility of new products
- making design changes for existing products
- all legal, governmental, financial, and personnel matters within the product development part of the division
- coordinating product development with manufacturing and sales and marketing

RESPONSIBLE TO:

Vice-President of Division

DIRECT REPORTS:

Project Managers

Staff Specialists (number will vary by division)

SALARY RANGE:

\$60,000 - \$85,000

PLANT MANAGER (Division)

RESPONSIBILITIES:

- overall management of a major manufacturing plant within a division
- all legal, governmental, financial, and personnel matters within the plant
- effectively and efficiently using plant resources to produce high quality products at the lowest feasible cost
- briefing the Director of Manufacturing for the divisions at least every two months on plant operations

RESPONSIBLE TO:

Director of Manufacturing of Division

DIRECT REPORTS:

Plant Superintendent

Engineering Manager

Quality Control Manager

Production Planning Manager
(numbers and titles will vary by division
and/or plant)

SALARY RANGE:

\$40,000 ~ \$70,000

LOOKING GLASS, INC.
DIVISIONS AND PLANTS

COMMERCIAL GLASS
DIVISION - (CGD)

INDUSTRIAL GLASS
DIVISION - (IGD)

ADVANCED PRODUCTS
DIVISION - (APD)

LIGHTING PRODUCTS
FLAT GLASS

AUTO GLASS
SPECIALTY GLASS
GLASS PIPING

OPTICAL FIBERS
INTEGRATED CIRCUITS
CAPACITORS

Appendix C

ASSEMBLING IN-BASKET MATERIALS AND OFFICE SUPPLIES

Appendix C

ASSEMBLING IN-BASKET MATERIALS AND OFFICE SUPPLIES

This section describes the materials needed and the process followed to duplicate all in-basket materials and office supplies used during Looking Glass. Qualified users of the simulation will receive a By-Position Master Set of materials and a By-Position Master Checklist from the Center for Creative Leadership. Descriptions of the Master Set and Master Checklist and explanations regarding preparation of office supplies and in-basket materials are included here.

I. DESCRIPTION OF THE MASTER SET

A. The in-basket materials

The Master Set of in-basket materials consists of 20 sections, one for each position in Looking Glass. Within each of these sections, materials for each position are separated into memos being sent TO the role and memos being sent FROM the role.

B. Office supplies

This additional section of the Master Set contains the originals for:

1. The telephone log (see Appendix G)
2. The routing slips (see Appendix E)
3. NCR memo paper - for APD, CGD, IGD, Corporate, and President (see Appendix E)

II. DESCRIPTION OF THE BY-POSITION MASTER CHECKLIST

A. Purposes of the Master Checklist

1. The Master Checklist is a complete listing of all materials that each role receives in the in-basket, and is used to verify that all memos and letters have been copied and placed correctly.
2. It is also a reference for checking and/or sorting the Master Set, should these memos ever be dropped or otherwise rearranged.

B. Explanation of Master Checklist headings (see Example 2)

1. In-basket for: _____

At the top of each page of the checklist the name of the role in whose in-basket these materials are to be placed appears.

2. Memo code number

The code number of the memo, found in the lower right-hand corner (see Example 3)

- a. Multipage memos

Memos of more than one page in length are also coded alphabetically (i.e., APD-19A and APD-19B, see Example 4).

- b. Single asterisk (*)

Some memo numbers have a single asterisk (*) beside them to indicate that, when sorted, they are to be placed at the top of the stack because they contain information basic to Looking Glass, i.e., history of company, organization chart, job description, corporate financial information, etc. (see Examples 2 and 5). These memos are listed first on the checklist for each role.

- c. Double asterisk (**)

Some memo numbers have a double asterisk (**) beside them, indicating that they have blanks on them in which meeting times are to be written on the copies, not the originals (see Examples 2 and 6). Appendix D has a complete listing of these memo numbers.

B. Explanation of Master Checklist headings (see Example 2) (cont.)

3. In-basket placement, TO/FROM

An x in the appropriate column indicates whether the memo is being sent TO the role or FROM the role.

4. Color

The color of paper on which the memo is to be duplicated.
The code letters are:

W = white
B = blue
G = green
Y = yellow

5. To be stapled

An x will appear in this column if the memo has more than one page or has an attachment.

6. Attachments

If a memo refers to an attachment in its text, the code number of the memo to be attached will be listed here.

7. Completed

This column is used to ensure that each memo has been duplicated, associated, and sorted correctly; it is critical that all memos are present.

III. PREPARATION OF OFFICE SUPPLIES

At the end of the Master Checklist there is a page labeled "Office Supplies" that lists how many copies of each of the office supplies are needed.

It is recommended that the routing slips and NCR memo paper be duplicated by a multilith machine, due to the large quantities needed and the nature of the NCR paper (a copy machine cannot handle it). Once copied, the routing slips should be cut in half lengthwise along the dotted line. The other office supplies can be run on the copier along with the in-basket materials.

IV. PREPARATION OF IN-BASKET MATERIALS

A. General comments

1. Duplication of the in-basket materials is straight-forward, i.e., make one copy of each page on the appropriate color paper. Four passes should be made through the materials, once for each color of paper (to avoid having to change the paper in the copy machine frequently).

2. Color-coding

The code letter indicating color of paper is found in the lower left-hand corner of each memo, followed by a number, which is to be ignored (see Example 3). This number was used at CCL to create and sort the By-Position Master Sets, and indicates how many copies of the page will be made in all.

3. Double memo code numbers

These were previously used at CCL to create and sort the By-Position Master Sets and served as a cross-check for memos that are to be associated with one another. Ignore them, as they may confuse more than help; do what the checklist indicates (see Example 7).

4. Brackets in the memo code number column

Those few memos that are to be associated with others will be bracketed in this column.

B. Materials needed

1. Large paper clips
2. Twenty third-cut manilla folders
3. Paper for the copier: white, blue, green, and yellow
4. Stapler
5. Twenty pairs of in-baskets

C. Preparing the manilla folder

A manilla folder labeled "Copies of Memos You Sent" is used to separate memos sent FROM the role from memos sent TO the role.

1. Type, in capital letters, one $\frac{1}{2} \times 3\frac{1}{2}$ " label for each of the 20 roles, as follows:

PRESIDENT	DIR-PD, APD
VP, APD	DIR-PD, CGD
VP, CGD	DIR-PD, IGD
VP, IGD	PM-CAPACITORS
DIR-MFG, APD	PM-OPT FIBERS
DIR-MFG, CGD	PM-INT CIRCUITS
DIR-MFG, IGD	PM-FLAT
DIR-S&M, APD	PM-LIGHTING
DIR-S&M, CGD	PM-AUTO
DIR-S&M, IGD	PM-SPECIALTY

Place these labels on the tab portion of the manilla folders (see Example 1).

2. Type, in capital letters, twenty 2x4" labels, as follows:

COPIES OF MEMOS YOU SENT

Place these labels on the front of each manilla folder (see Example 1).

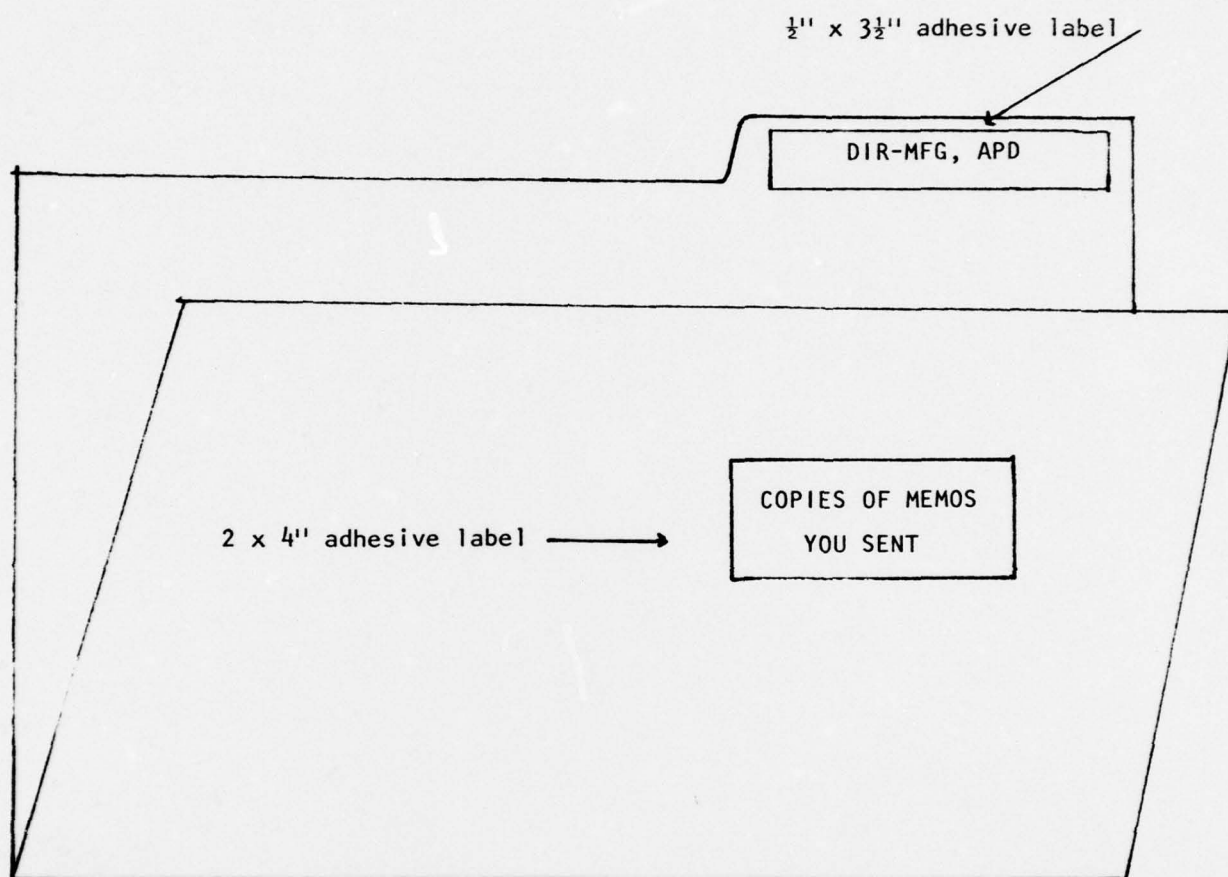
D. Recommended duplicating procedure

1. Set up the pairs of in-baskets for each of the 20 roles, labeling them clearly by role and division (refer to Preparing the manilla folder section of this appendix for a list of these titles).
2. Place the manilla folder for that role in the in-basket.
3. Make a copy of the Master Checklist, for use in marking off all of the materials when you have copied them.
4. Copy all materials to be printed on white paper for each role, placing those memos FROM the role in that role's manilla folder, and those memos TO the role in the other tray of the in-basket (see the In-basket placement column on the Master Checklist). The letter indicating the color of paper to be used is found in the lower left hand corner of each sheet, as well as on the checklist.
5. Repeat the process in 4. above, for each color paper.

D. Recommended duplicating procedure (cont.)

6. Using the Master Checklist, verify that:
 - a. All memos are present
 - b. All memos have been copied on the right color paper
 - c. All memos have been separated correctly into those TO the role and those FROM the role
7. Staple all multipage memos and memos having attachments (see Examples 2, 4, and 7).
8. Write the meeting times in the blanks on the memos that are listed in Appendix D (those with a double asterisk on the checklist).
9. Separation and shuffling of memos:
 - a. FROM memos
 - 1) Separate those FROM memos that have a single asterisk next to them on the checklist from the other FROM memos.
 - 2) Shuffle the latter group so these are random, and place them in the "Copies of Memos You Sent" manilla folder.
 - 3) Place the memos that had a single asterisk next to them on the checklist (see 1 above) on top of the shuffled group in the folder in the order listed on the checklist.
 - 4) Place the manilla folder, now containing all copies of memos FROM that role, in the "IN" basket.
 - b. TO memos
 - 1) Separate those TO memos that have a single asterisk next to them on the checklist from the other TO memos.
 - 2) Shuffle the latter group so these are random.
 - 3) Place the TO memos that had a single asterisk next to them on the checklist (see 1 above) on top of the shuffled group in the order listed on the checklist.
 - 4) Clip all TO memos together and put them in the "IN" basket on top of the manilla folder (on the outside).
10. Verify that you have made the needed office supplies for each role and for the controllers.

EXAMPLE 1



Manilla Folder

173

EXAMPLE 2

BY-POSITION MASTER CHECKLIST -- LOOKING GLASS, INC.

IN-BASKET FOR: DIR-MFG, APD

MEMO CODE NUMBER	IN-BASKET PLACEMENT		COLOR	TO BE STAPLED	ATTACHMENTS	COMPLETED
	TO	FROM				
CORP-3A to 3B*	X		W	X		
APD-12	X		Y			
APD-19A to 19B	X		Y	X		
{ APD-111	X		Y	X	IGD-57	
{ IGD-57	X		B	X		
APD-88**		X	Y			
APD-11		X	Y			
APD-89		X	Y			

* Place at the top of the stack of memos

** Times to be written in

NOTE: This is an abbreviated version of what the By-Position Master Checklist for the Director of Manufacturing, APD would look like. Refer to Examples 3 through 9 for copies of the memos listed here.

LOOKING GLASS
Advanced Products Division

EXAMPLE 3 174

To: Vice-President, APD
From: Director of Manufacturing, APD
Re: Unions

Copies to:
PM-CAPACITORS
PM-INT CIRCUITS
PM-OPT FIBERS

Although we don't need to worry about unions presently, the trend is disconcerting from this month's union vote:

	% YES	
	<u>This Month</u>	<u>Last Year</u>
Optical Fibers	31%	8%
Capacitors	29%	18%
Integrated Circuits	-	-

The problem is that our wage structure has fallen slightly below the national average for the glass industry.

	<u>Five Years From Now</u>	<u>This Year</u>	<u>Five Years Ago</u>
Glass Industry	8.86*	6.06	4.26
Looking Glass	7.82*	5.93	5.03

*projected

We paid about \$10.6 million to our hourly employees this past year in wages and benefits (an additional \$200,000 would bring us to parity). However, if our projections are close, we would be \$1.6 million shy of parity within five years with our present work force of 800 and \$1.4 million shy with the employees in our two new plants. Obviously, this is what makes workers feel they need a union.

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Color Code Letter

Y-5

Memo Code Number

APD-89

LOOKING GLASS
Advanced Products Division

EXAMPLE 4, p. 1

To: Listed Below
From: Vice-President, APD
Re: Affirmative Action Balance Sheets

Copies to:
DIR-MFG, APD
DIR-S&M, APD
DIR-PD, APD
PM-CAPACITORS
PM-INT CIRCUITS
PM-OPT FIBERS

It's that time again. I need your affirmative action balance sheets for the year--same format as last year (last year's data attached).

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Y-7

Memo Code Number
(multipage memo)



AD-A063 056

CENTER FOR CREATIVE LEADERSHIP GREENSBORO NC
LOOKING GLASS, INC. VOLUME I. AN ORGANIZATIONAL SIMULATION. OPE--ETC(U)
OCT 78 M W MCCALL, M M LOMBARDO
CCL-TR-12
N00014-76-C-0870

F/G 5/1

UNCLASSIFIED

NL

3 OF 3

AD
A063 0 56



END
DATE
FILMED

3--79
DDC

LOOKING GLASS
Advanced Products Division

EXAMPLE 4, p. 2

To:

From:

Re:

Copies to:

EEOC REPORT

<u>% of</u>	<u>Women</u>	<u>Minorities</u>	<u>Nonminorities</u>
Professionals	28.0	3.0	69.0
Technicians	22.0	2.0	76.0
Office & Clerical	82.8	10.5	6.7
Sales	10.0	5.4	84.6
Craftspersons	12.0	6.0	82.0
Operations	16.0	7.9	76.1
Laborers	1.2	7.0	91.8
Service	62.6	18.4	19.0
Officials & Managers	<u>22.0</u>	<u>3.8</u>	<u>74.2</u>
Total	32.0	8.2	59.8

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Y-7

Memo Code Number
(multipage memo)

APD-19B

LOOKING GLASS
Corporate Offices

EXAMPLE 5, p. 1

To: All Executives of Looking Glass, Inc.
From: Corporate Controller
Re: Corporate Profits (In Thousands)

Copies to:

	NET SALES		NET PROFITS	
	LATEST YEAR	PREVIOUS YEAR	LATEST YEAR	PREVIOUS YEAR
Commercial	\$72,000	\$67,867	\$3,300	\$3,106
Advanced	39,400	35,100	3,600	2,700
Industrial	<u>87,000</u>	<u>73,600</u>	<u>4,600</u>	<u>3,018</u>
TOTAL	\$198,400	\$176,567	\$11,500	\$8,824

NET INCOME AS A % OF SALES

	LATEST YEAR	PREVIOUS YEAR
Commercial	4.6%	4.6%
Advanced	9.1%	7.7%
Industrial	<u>5.3%</u>	<u>4.1%</u>
TOTAL	5.8%	5.0%

CURRENT FINANCIAL RATIOS

	Commercial	Advanced	Industrial
Debt to Equity	37.6	58.2	32.6
Return on Equity	10.4	12.1	7.8
Return on Assets	5.6	7.5	5.4
Receivables Turnover	7.1	7.0	8.5
Cost of Goods Sold As a % of Sales	74.8%	70.9%	73.9%
R & D As a % of Sales	1.8%	5.1%	5.3%
Operating Profit Margin As a % of Sales	12.1%	18.3%	13.9%

W-20

Memo Code Number
(multipage memo)

→ CORP-3A

DEFINITIONS OF FINANCIAL RATIOS

DEBT/EQUITY RATIO: The proportion of capital supplied by creditors.

RETURN/EQUITY RATIO: Percentage return (net income) on stockholder's investment.

RETURN ON ASSETS: Net income divided by total assets. Percentage return on the book value of the resources of the firm.

RECEIVABLES TURNOVER: Measure of how quickly customers pay their accounts and of current credit policies. Net Sales divided by Accounts Receivable.

COST OF GOODS SOLD AS A % OF SALES: Measure of how efficiently goods are manufactured and sold.

R & D AS A % OF SALES: Investment in research on future products.

OPERATING PROFIT MARGIN: $\frac{\text{Net Income}}{\text{Net Sales}}$ before taxes and interest are paid.

Memo Code Number (multipage memo)

W-20

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CORP-3B

LOOKING GLASS
Advanced Products Division

EXAMPLE 6

179

To: Listed Below
From: Director of Manufacturing, APD
Re: Meeting

Copies to:

PM-CAPACITORS
PM-INT CIRCUITS
PM-OPT FIBERS

Our meeting to discuss your plant operations and problems will
be at **2:30** in my office.

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Y-4

APD-88

LOOKING GLASS
Advanced Products Division

EXAMPLE 7, p. 1

18

To: Director of Manufacturing, APD
From: Plant Manager, Integrated Circuits
Re: Soda Ash Crisis

Copies to:

PM-CAPACITORS
PM-OPT FIBERS

We're in trouble. I'm attaching a memo I just saw (IGD-57) explaining our problem. We only have a 10-day supply; Capacitors has 11 and Optical Fibers, 6. Commercial gets their soda ash from Cyborg so maybe we can work up a deal with them.

If not, we'll have to pay dearly. I called two independent suppliers. They quoted me \$36.50 and \$36.35 a ton. This is \$3.02 to \$3.17 more than we're now paying.

Memo # to be attached to APD-111

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Y-4

APD-111
(IGD-57)

LOOKING GLASS
Industrial Glass Division

EXAMPLE 7, p. 2

To: Plant Manager, Auto Glass
From: Plant Controller, Auto Glass
Re: Soda Ash Crisis

Copies to:

We have a crisis on our hands! The rep at Mountain Minerals, Inc., our supplier of soda ash, just called to tell me they won't be able to process any more soda ash for the next four weeks, because somebody dynamited all their mining equipment last night. Because it is so specialized, it's highly unlikely they will be able to get it replaced before four weeks, if then. We currently have a 6-day supply (at 150 tons per day).

The only viable option seems to be to borrow from the other divisions. I'm sure the Commercial Glass Division has surplus. By the way, it would be best for us to get the soda ash delivered by train. Our storage silos hold only a 3-day supply.

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B-1
B-4

IGD-57
(APD-111)

LOOKING GLASS
Advanced Products Division

EXAMPLE 8

182

To: Plant Manager, Optical Fibers
From: Director of Manufacturing, APD
Re: Information Report

Copies to:

Your temporary employment figures and raw materials costs are up.
Is there an explanation?

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Y-2

APD-11

LOOKING GLASS
Advanced Products Division

To: Director of Manufacturing, APD
From: Director of Sales and Marketing, APD
Re: Transfer Price

Copies to:
VP, APD
PM-CAPACITORS

Our transfer price battle with Commercial Glass goes on. At the moment we're selling glass capacitors at somewhere between 10 to 12 cents per item, depending on the type of capacitor and the customer.

Commercial's argument is that they're only making a 2% profit, but I wonder if they're full costing on their overhead to make their profit margin artificially low. They're requesting a 7% increase in price, from a little over 1 cent to 1.1 cents per blank.

Also, they're saying that they can get 15% more profit by cutting us and making environmental glass (insulating, heat reflecting and heat absorbing). That's fine for them, but to get blanks on the open market will cost us 1.8 to 2.0 cents per blank, and that will price us right out of our markets. This one factor could cut our market share 30%.

I'll remind them again that the glass we use from them is simply a casing. As such, it represents only a fraction (15-25%) of our production costs.

Appendix D

MEMOS NEEDING TIMES INSERTED

Appendix D

MEMOS NEEDING TIMES INSERTED

Following is a list of memos on which times must be written after copies have been made (indicated by a double asterisk on the By-Position Master Checklist).

IGD-36

IGD-37

IGD-38

APD-88

CGD-66

PRES-1

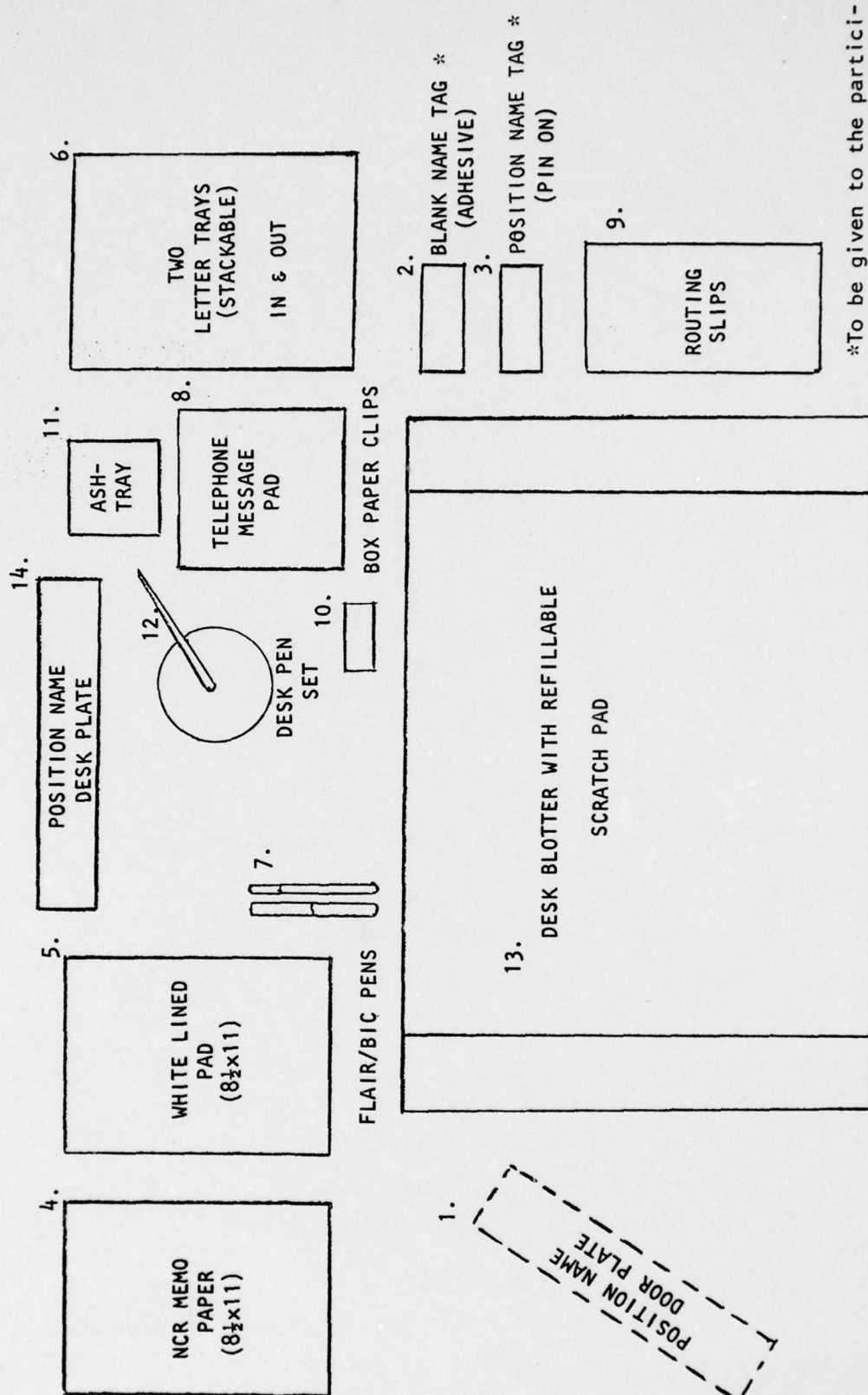
PRES-14

PRES-17

Appendix E
TYPICAL DESK LAYOUT

Appendix E

TYPICAL DESK LAYOUT



*To be given to the participants upon arrival and to be worn for the duration of the program.

ITEM	TO ROLE GIVEN	QUANTITY	ROLE SPECIFIC INFORMATION
1. Position Name Door Plate	Each role	1	Posted outside office/desk area
2. Blank Name Tag (Adhesive)	Each role	1	To be given to participants upon arrival and to be worn for the duration of the program.
3. Position Name Tag (Pin On)	Each role	1	To be given to participants upon arrival and to be worn for the duration of the program.
4. NCR memo paper	Each role	100 Sheets	White: President White: Corporate Yellow: APD Green: CGD Blue: IGD
5. White lined pad (8½x11")	Each role	1	
6. Letter trays (stackable)	Each role	1, labelled "IN" 1, labelled "OUT"	Black: President, VPs Beige: other roles
7. Pens, black ink - Flair - Bic	Each role Each role	1 1	
8. Telephone message pad	Each role	1	
9. Routing slips	Each role	25	
10. Paper clips	Each role	1 small box	
11. Ashtray* - Large - Small	Each role President, VPs All other roles	1 each 1 each	Round, amber glass Square, black plastic

ITEM	TO ROLE GIVEN	QUANTITY	ROLE SPECIFIC INFORMATION
12. Desk pen sets*	President, VPs	1 each	
13. Desk blotter with refill scratch pad*	President, VPs	1 each	
14. Position Name Desk Plate* - Wooden - Plastic	President, VPs All other roles	1 each 1 each	Walnut plastic mounted on solid wood base Black plastic mounted on slide-in metal base

*These items were used to emphasize status differences between the President/Vice-Presidents and all other roles, i.e., Directors and Plant Managers.

LOOKING GLASS, INC.
ROUTING SLIP

TO:

____ President

____ Vice-President

____ APD

____ CGD

____ IGD

____ Director, Sales and Marketing

____ APD

____ CGD

____ IGD

____ Director, Manufacturing

____ APD

____ CGD

____ IGD

____ Director, Product Development

____ APD

____ CGD

____ IGD

____ Plant Manager

____ Capacitors, APD

____ Integrated Circuits, APD

____ Optical Fibers, APD

____ Flat Glass, CGD

____ Lighting Products, CGD

____ Auto Glass, IGD

____ Specialty Glass, IGD

____ Glass Piping, IGD

____ For your signature

____ For your approval

____ For your files

____ For your information

____ Please read and return

____ Please read and pass on

____ Please comment

COMMENTS: _____

190

LOOKING GLASS, INC.
ROUTING SLIP

TO:

____ President

____ Vice-President

____ APD

____ CGD

____ IGD

____ Director, Sales and Marketing

____ APD

____ CGD

____ IGD

____ Director, Manufacturing

____ APD

____ CGD

____ IGD

____ Director, Product Development

____ APD

____ CGD

____ IGD

____ Plant Manager

____ Capacitors, APD

____ Integrated Circuits, APD

____ Optical Fibers, APD

____ Flat Glass, CGD

____ Lighting Products, CGD

____ Auto Glass, IGD

____ Specialty Glass, IGD

____ Glass Piping, IGD

____ For your signature

____ For your approval

____ For your files

____ For your information

____ Please read and return

____ Please read and pass on

____ Please comment

COMMENTS: _____

LOOKING GLASS
Corporate Offices

191

To:

From:

Re:

Copies to:

LOOKING GLASS
Office of the President

192

To:

From:

Re:

Copies to:

LOOKING GLASS
Advanced Products Division

193

To:

From:

Re:

Copies to:

LOOKING GLASS
Commercial Glass Division

To:

From:

Re:

Copies to:

LOOKING GLASS
Industrial Glass Division

195

To:

From:

Re:

Copies to:

Appendix F
OUTLINE OF INTRODUCTION
LOOKING GLASS, INC.

Appendix F
OUTLINE OF INTRODUCTION
LOOKING GLASS, INC.

COFFEE

I. WELCOME (by sponsor)

- A. Hand out name tags (position and blank)
- B. Opening comments

II. INTRODUCTIONS

- A. Staff members
- B. Outsiders
- C. Participants (real life)
- D. Participants (Looking Glass role)

III. LINKAGES

- A. How program came to be
- B. Participant
 - 1. Why chosen
 - 2. How assigned to roles

IV. OBJECTIVES

- A. Overview
 - 1. Program outline summarized
 - 2. Schedule for simulation (brief)
- B. Brief history of simulation
 - 1. Based on real events
 - 2. Generic management problems
 - 3. Respond as they would on job
 - 4. No tricks (emphasize)

B. Brief history of simulation (cont.)

5. No one assigned to disrupt
6. Not setting them up
7. A day in the life . . .
8. They are the top management team

C. Observers and feedback

1. Nature and use of the data
2. Confidentiality
3. Role of observers
4. Feedback to be received

D. Goals

1. For you: behave as you normally would
2. For observers: to record behavior
3. For all of us: to learn from the experience

V. LOOKING GLASS, INC.

A. Basic description

1. \$200 million in sales
2. History of Looking Glass (see CORP-1)

B. Organizational structure

1. Overhead of organizational chart (all are top management - 40-70K)
2. Product lines

a. APD

- 1) Optical fibers
- 2) Integrated circuits
- 3) Capacitors

b. IGD

- 1) Auto glass
- 2) Specialty glass
- 3) Glass piping

c. CGD

- 1) Lighting products
- 2) Flat glass

B. Organizational structure (cont.)

3. Roles not shown on organization chart can be contacted
4. PM-glass piping vacancy
5. PMs at corporate for bi-monthly visit (in-basket with them)
6. Executive level emphasized

VI. PROCEDURES (give out Procedures Handout here)

A. Name tags/title tags

B. Offices

1. Each has been assigned an office (hand out Floor Plan)
2. On your desk you will find typical things

in-basket	nameplate	routing slips
telephone	memo paper	paper clips
paper and pens	ashtray	message pads

3. The in-basket

- a. Memos and letters to you
- b. Memos you have sent (recipients have copies of them already)
- c. Switchboard not open for 45 minutes
- d. Write on anything you want

C. Using the telephone (should be adapted to fit system in use; the following pertains to the system used at CCL)

1. Looking Glass still has antiquated system
2. Ignore dials and buttons
3. Pick up receiver, wait for operator
4. Tell operator number of party (see organization chart)
5. Wait for operator to connect you (you will not hear it ring)
6. Hang up between consecutive calls (to give operator a chance to clear the lines)
7. Conference calls are possible
8. Be patient
9. Switchboard closed during lunch

D. Using the mail system

1. NCR paper will make up to 10 copies
2. Stack only as many pages as you need
3. Press down with ballpoint pen
4. Indicate title and division clearly on each copy
5. Use routing slips if feasible, and attach to each copy
6. Keep a file copy
7. Mail will be picked up four times during the day, at _____, _____, _____, and _____.
8. Have outgoing mail in your outbasket at those times

E. Contacting outsiders

1. People outside of Looking Glass or not on the organization chart can be contacted by memo or by phone
2. Send memo to party or ask operator to take a message to have party call you
3. If your party is available today, you will receive a reply

F. Conference area

1. Available for your use on first-come, first-served basis
2. Point out on floor plan

G. Lunch

1. As in real life, the organization goes on
2. Lunch will be from _____ to _____ (tell where)
3. Switchboard (if manual) is closed during lunch

H. Amenities

1. Coffee is available
2. Snacks, soft drinks
3. Rest rooms are _____
4. Water is _____
5. Act as you would on a typical working day

1. Ask for questions

VII. SUMMARY

1. Your task is to manage Looking Glass
2. Be sure to keep your title tags on
3. The switchboard will open at _____; use your time to look through your in-basket
4. The simulation will end at _____ with an address by the President at _____ (tell location of address)
5. Please don't take any materials home tonight; leave them on your desk (tell why)
6. We will not intervene; there are no tricks

VIII. QUESTIONS

Appendix G
TELEPHONE LOG
LOOKING GLASS, INC.

Appendix H
PROCEDURES
LOOKING GLASS, INC.

Appendix H
PROCEDURES
LOOKING GLASS, INC.

1. NAME TAGS
 - Please wear both your name tag and your title tag throughout the day
2. OFFICES (Give out floor plan)
 - Write on anything you want
 - Telephone numbers are on the floor plan
3. TELEPHONE CALLS
 - Switchboard closed for next 45 minutes
 - Pick up receiver and wait for operator
 - Give the number you are calling, operator will connect you (you will not hear a ring)
 - Conference calls possible
 - Hang up between calls and wait between calls
4. MAIL
 - Use NCR paper and ballpoint pen (10 copies maximum)
 - Use only as many sheets as you need, plus a copy for your file
 - Use title and division of recipient; indicate on each copy to whom it goes, or attach routing slip (if appropriate)
 - Mail will be picked up at _____, _____, _____, and _____.
5. CONTACTING PEOPLE NOT ON THE ORGANIZATION CHART AND OUTSIDERS
 - Send a memo in the usual way
 - Leave a message with the operator to have that person call you
6. A CONFERENCE AREA IS AVAILABLE ON FIRST-COME, FIRST-SERVED BASIS (see floor plan)
7. LUNCH
 - Is from _____ to _____
 - Switchboard closed then
8. THE SIMULATION ENDS AT _____

Appendix I

ADMINISTRATIVE CHECKLIST FOR LOOKING GLASS, INC.

Appendix I

ADMINISTRATIVE CHECKLIST FOR LOOKING GLASS, INC.

I. PRELIMINARIES

A. Choosing the staff

- ☐ Staffing needs determined: qualified people found
- ☐ Staff trained for required roles
- ☐ At least one staff member qualified and available to counsel participants

B. Selecting participants

- ☐ Participants chosen according to research or training needs
- ☐ Participants screened for potential problems
- ☐ Participants make informed choice to participate
- ☐ Backups arranged
- ☐ Participants assigned to roles

C. Choosing a site

- ☐ Site removed from interruptions
- ☐ Site has adequate space (see Appendix A)

D. Prewrite packets (see Appendix B)

- ☐ Reproduced and sent to participants so they receive them at least a week prior to program

E. In-basket materials

- ☐ Reproduced and assembled for each role (see Appendix C)
- ☐ Appropriate division volumes obtained for staff reference

II. SETUP

A. Scheduling

- ☐ Simulation schedule decided
- ☐ Times set for mail pickups
- ☐ Lunch is scheduled
- ☐ Times for President's Address and other meetings entered on memo copies (see Appendix D)

B. Office supplies and desk setup

- ☐ Accoutrements obtained
- ☐ Offices arranged to create status differences
- ☐ Props placed on desks and dividers (see Appendix E)
- ☐ In-baskets verified
- ☐ Floor plan drawn up
- ☐ Flip chart placed in conference area

C. The telephone system (if used)

- ☐ Phone system obtained
- ☐ Set up and tested
- ☐ Phone numbers listed on organization chart and floor plan

III. INTRODUCTION AND START-UP

- ☐ Speaker chosen to welcome participants
- ☐ Name tags and position tags prepared (duplicate set as backup)
- ☐ Introduction is studied and prepared (see Appendix F)
- ☐ Appropriate props and handouts assembled (see Appendix H)
- ☐ Overhead of organization chart made

IV. THE RUN ITSELF

A. Observer conduct

- ☐ Observers informed of conduct expected
- ☐ Discreet observation points set up
- ☐ All observer tally sheets available (packets created for individual observers, if desired)

B. Mail delivery

- ☐ Procedures established
- ☐ Folders for all positions available
- ☐ NCR paper available for use by ghosts answering information requests

C. Information requests and responses

- ☐ Controller selected and briefed
- ☐ Information request logs prepared (if used)

D. Lunch

- ☐ Staff lunch arranged
- ☐ Plans for lunchtime observations complete

E. The President's Address

- ☐ Videotape arrangements made (if used)
- ☐ Adequate room available

F. Telephones (if used)

- ☐ Operator and backup trained
- ☐ Message procedures established
- ☐ Message pads and telephone logs available

V. CLOSING UP

A. Data collection

- ☐ Instruments chosen and duplicated
- ☐ Collection and scoring procedures established

B. Ventilation and closing

- ☐ Person chosen to lead session
- ☐ Other staff assigned to clean up offices
- ☐ Observers have time to fill out forms

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